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MANAGEMENT BY RESULTS REPORT

1983-84 PLANS

FEBRUARY, 1983

Ministry of the Environment
Ontario

Hon. Keith C. Norton, Q.C.,
Minister

Gérard J. M. Raymond,
Deputy Minister

MANAGEMENT BY RESULTS REPORT

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MINISTRY OF THE ENVIRONMENT

POLICY AND PLANNING BRANCH

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INTRODUCTION

This report provides a statement of the Ministry of the Environment's plans for the 1983-84 fiscal year.

Management By Results documentation is still being actively implemented throughout the Ministry, and changes to the format and to the quality and quantity of data included are occurring with each report. This document is compiled as one of a series of MBR reports by the Policy and Planning Branch using data from a number of sources internal to and external to the Ministry. Any queries concerning the data in these reports should initially be directed to:

Policy and Planning Branch
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Management By Results is a philosophy which stresses accomplishments (or outputs) rather than the resources required or methods used to obtain them. It is designed to place accountability both on staff and on Ministries for their assigned resources.

The concept is simple and consists of the following stages:

1) a statement of an objective, and a translation of that objective into a measurable target;

2) the establishment of an annual plan of accomplishments in conjunction with an assigned budget;

3) periodic measurement of actual accomplishments and identification to upper management of significant deviations from plans.

Within the Ministry, a number of objectives exist - some very broad corporate level objectives can be derived from the Ministry's Goal Statement; the operating programs also have clearly defined responsibilities focussing on specific client groups; within these programs, individual organizational units have various functional and administrative responsibilities. In short, a hierarchy of such objectives can be constructed, and the Ministry's MBR projects have been developed to reflect this hierarchy. Three "levels" of MBR projects have been created, as follows:

Corporate Level MBR Projects have been established for each of the Ministry's 9 corporate objectives.

These are structured as follows:

- Objective
- Description
- Results
- Summary and Assessment

These projects should be considered as planning tools for assessing both current and future environmental needs in Ontario. At present, they are in different stages of development and appropriate "Results" indicators are not uniformly developed.

Program Level MBR Projects have been established for each major program area within the Ministry. These are structured as follows:

- Objective
- Description
- Workload
- Results (past years, current year, upcoming year)
- Efficiency Indicators
- Resources

These projects should be considered as tools for evaluating the effectiveness of ongoing Ministry programs.

In accordance with MBR guidelines outlined by the Management Board Secretariat, the Results section of each project identifies three categories of results:

i) operational outputs, describing the work performed within the project;

ii) program outputs, describing the client benefits produced by the project;

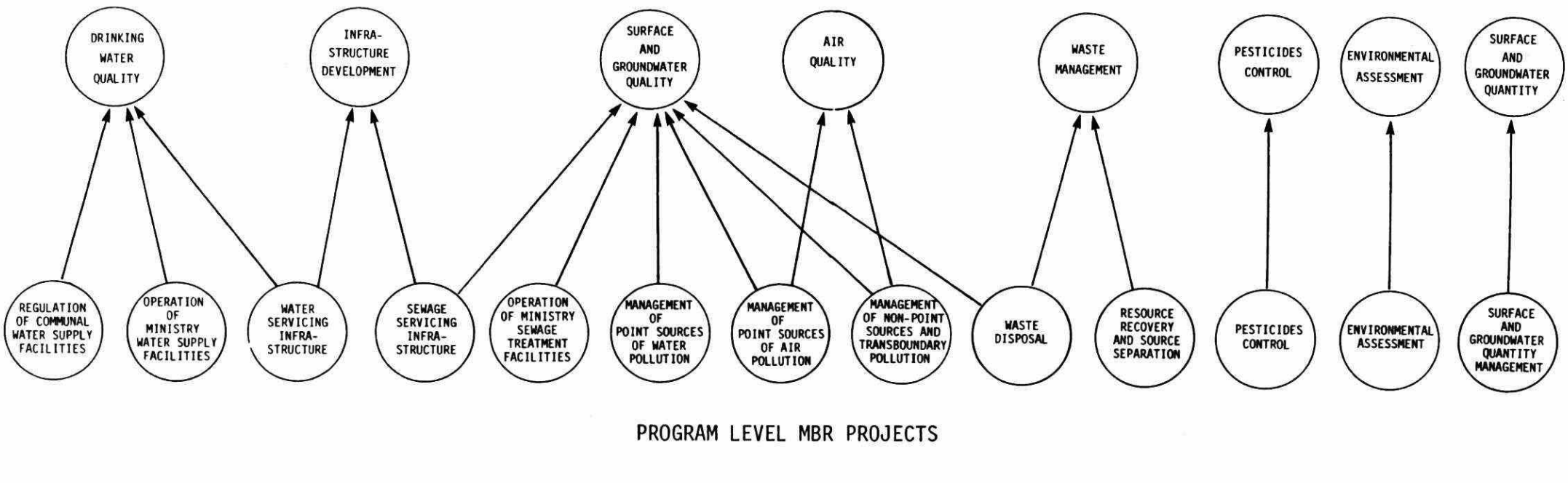
iii) program effects, describing the consequences or impacts of the project.

The use of these results categories is explained in detail in the booklet "Manager's Guidelines to Managing By Results", Management Board Secretariat, August 1982.

In this report, operational outputs are identified only when program outputs or program effects are not well developed.

Branch Business Plans identify the major functions performed in each of the organizational units of the Ministry, and describe the annual operational plans of the Ministry. They are not included in this report.

The relationship between the Program Level MBR projects and the Corporate Level MBR projects is identified by the diagram below:



PROGRAM LEVEL MBR PROJECTS

MBR PROJECT ON THE REGULATION OF COMMUNAL WATER SUPPLY FACILITIES

OBJECTIVE

To regulate communal water supply facilities in order to ensure the provision of safe drinking water for Ontarians.

DESCRIPTION

This project consists of:

- work related to the assessment of the health effects of contaminants which may occur in drinking water, and the development of standards for those contaminants,
- monitoring of drinking water quality, and
- work related to the development of remedial measures at plants delivering an unsatisfactory quality of drinking water.

WORKLOAD

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
No. of Municipally operated communal water supply facilities	332	356	329	359	367
No. of Ministry operated communal water supply facilities	99	89	111*	95	100
No. of privately operated communal water supply facilities (estimates)	500	500	500	500	500
No. of contaminants of concern (approx.)	N/A	N/A	N/A	400	400

* Planned results included a number of facilities which are operated by municipalities under service contracts to the Ministry.

RESULTS

Results indicators are not available for the privately operated communal water supply facilities. There is no comprehensive regulatory program for these facilities, although complaints are investigated.

Program Outputs:

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
(1) Municipally Operated Facilities:					
Facilities assessed as meeting drinking water quality and quantity objectives	212	218	238	269	296
Facilities assessed as not meeting drinking water quality and quantity objectives	102	91	59	90	71
Facilities assessed as not meeting drinking water quality objectives:					
- Remedial measures completed during year or underway at year-end by facility owner	N/A	N/A	N/A	60	40
- No action planned, or project halted due to funding limitations	N/A	N/A	N/A	13	16
	N/A	N/A	N/A	73	56
Facilities with no assessments	18	47	32	0	0
Population serviced by facilities not meeting drinking water quality objectives				548,523	389,352

A summary of the failures identified and the remedial measures initiated or to be initiated for Municipal water supply facilities is found below.

During 1983-84, 56 facilities are expected to fail drinking water quality objectives. 40 of these facilities will have remedial measures underway. All potential health problems are being addressed.

REMEDIAL MEASURES - MUNICIPAL WATER TREATMENT PLANTS

	1982-83 PRELIMINARY ACTUAL		1983-84 PROPOSED	
PRIMARY REASON FOR FAILURE TO MEET OBJECTIVES	FAILURES IDENTIFIED	REMEDIAL MEASURES	FAILURES IDENTIFIED	REMEDIAL MEASURES UNDERWAY
1. Raw Water Characteristics	38	5 under construction 1 construction completed 2 process control improvements underway 1 reverting to other process 1 conducting treatability studies 1 upgrading completed 6 under discussion with municipality 3 engineering study phase 2 final design phase 3 funding under review 1 funding approval rejected - project halted 1 no action proposed - aesthetic only 9 aesthetic problem only - no action planned 1 no action	31	4 under discussion with municipality 2 final design phase 3 funding under review 4 under construction 2 construction completed 1 no action proposed - aesthetic only 2 process control improvements underway 1 remedial measures underway to prevent salt contamination 1 alternative water source under development 9 aesthetic problem only - no action planned 1 no action 1 conducting treatability studies
2. Treated Water Characteristics or Distribution	36	3 construction completed 1 completing the distribution system 1 distribution system disinfection underway 5 under discussion with municipality 5 engineering study phase 2 final design phase 7 funding under review 1 funding approval rejected - project halted 4 under construction 1 collection system deficiency under study 1 sewer replacement underway 1 other 3 no action	31	2 under discussion with municipality 1 engineering study phase 8 funding under review 1 funding approval rejected - project halted 6 under construction 6 construction completed 1 other 1 infiltration problems are being corrected 1 eliminating winter bleeding 1 distribution system monitoring 3 no action
3. Maintenance and/or Operation	8	1 operator training is being provided 2 operation and/or maintenance procedures being implemented 2 process control improvements underway 1 conducting treatability studies 2 implementing an operations control program	3	1 final design phase 1 construction completed 1 process control improvements underway
4. Process and /or Equipment	3	1 under discussion with municipality 1 engineering study phase 1 funding approval rejected - project halted	4	1 engineering study phase 1 final design phase 2 funding approval rejected - project halted
5. Other	5	4 implementing an operations control program 1 process control improvements underway	2	1 remedial measures being evaluated 1 no action
TOTAL	90		71	

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
(2) Ministry Operated Facilities:					
Facilities assessed as meeting drinking water quality and quantity objectives	80	66	65	62	76
Facilities assessed as not meeting drinking water quality and quantity objectives	11	28	33	33	24
Facilities assessed as not meeting drinking water quality objectives:					
- Remedial measures completed during year or underway at year-end by facility owner	N/A	N/A	21	21	13
- No action planned, or project halted due to funding limitations	N/A	N/A	7	9	8
	N/A	N/A	28	30	21
Facilities with no assessments	8	0	5	0	0
Population serviced by facilities not meeting drinking water quality objectives				436,790	31,345

A summary of the failures identified and the remedial measures initiated or to be initiated for Ministry water supply facilities is found below.

During 1983-84, 21 facilities are expected to fail drinking water quality objectives. 13 of these facilities will have remedial measures underway. All potential health problems are being addressed.

REMEDIAL MEASURES - MINISTRY WATER TREATMENT PLANTS

	1982-83 PRELIMINARY ACTUAL		1983-84 PROPOSED	
PRIMARY REASON FOR FAILURE TO MEET OBJECTIVES	FAILURES IDENTIFIED	REMEDIAL MEASURES	FAILURES IDENTIFIED	REMEDIAL MEASURES UNDERWAY
1. Raw Water Characteristics	5	1 process control improvements underway 2 engineering study phase 1 final design phase 1 no action	4	2 under construction 1 construction completed 1 no action
2. Treated Water Characteristics or Distribution	14	2 construction completed 2 engineering study phase 1 final design phase 2 under construction 1 replacement of distribution systems underway 1 minor deviations - no remedial measures are required 5 aesthetic problem only - no action planned	12	2 final design phase 3 under construction 1 replacement of distribution system underway 1 minor deviations - no remedial measures are required 5 aesthetic problem only - no action planned
3. Maintenance and/or Operation	3	2 operator training is being provided 1 implementing an operations control program	0	
4. Process and/or Equipment	2	1 process control improvements underway 1 existing equipment/operation is being repaired	0	
5. Other	9	1 engineering study phase 4 inplant sampling is being modified 2 reduce winter bleeding 2 no action	8	1 construction completed 4 remedial measures being evaluated 2 reduce winter bleeding 1 no action
TOTAL	33		24	

EFFICIENCY*

	1982-83 Preliminary Actual	1983-84 Proposed
Capacity of facilities meeting drinking water quality objectives/person-year	114.0	122.7
Capacity of facilities not meeting drinking water quality objectives/person-year	17.1	8.4
% capacity of municipally-operated facilities meeting drinking water quality objectives	90.0%	92.9%
% capacity of Ministry-operated facilities meeting drinking water quality objectives	69.7%	97.6%

* Outputs are partially dependent on the availability of capital funds for remedial measures. The Provincial component of these funds is identified in the MBR Project on Water Servicing Infrastructure.

RESOURCES

	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
. Expenditures ($000's)	2,890.3	3,235.0	3,035.0	2,861.0
. Person-Years	75.0	75.0	74.0	74.0

MBR PROJECT ON THE OPERATION OF MINISTRY WATER SUPPLY FACILITIES

OBJECTIVE

To operate all water supply facilities owned by the Ministry of the Environment and to undertake any in-plant remedial measures required to ensure the provision of safe drinking water.

DESCRIPTION

The resources assigned to this MBR project include:

- the person-years and budgets required to operate Ministry-owned water supply facilities,
- the person-years and budget of the Regions relating to the overall management of these facilities, and
- the person-years and budget of Capital Financing and Revenue Branch associated with the collection of operating revenues.

WORKLOAD

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
No. of Facilities Operated	99	89	111*	95	100

* Planned results included a number of facilities which are operated by municipalities under service contracts to the Ministry.

The chart below summarizes information on the number of plants, capacity and actual flow of Ministry water treatment facilities by treatment type.

Treatment Type	1981 No. of Plants	1981 Capacity ($10^3 m^3/d$)	1981 Actual Flow	1982 ESTIMATED No. of Plants	1982 ESTIMATED Capacity ($10^3 m^3/d$)	1982 ESTIMATED Actual Flow	1983 PROJECTED No. of Plants	1983 PROJECTED Capacity ($10^3 m^3/d$)	1983 PROJECTED Actual Flow
GROUND SOURCE									
No Treament	17	39.6	N/A						
Chemical Treatment	10	16.0	N/A						
Physical Treatment	1	0.5	N/A						
Chemical & Physical Treatment	5	2.0	N/A						
				No Data Available			No Data Available		
SURFACE SOURCE									
Chlorinated Only	9	28.5	N/A						
Chemical Treatment	2	14.5	N/A						
Physical Treatment	4	101.6	N/A						
Chemical & Physical Treatment	41	1,231.9	N/A						
TOTAL	89	1,434.6	772.8	95	N/A	788.0	100	N/A	804.0

NOTE: All flow information reported in $10^3 m^3/d$.

RESULTS

Program Outputs	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
Pumpage (10^3 m^3/D)	695.5	772.8	818.3	788.0	804.0
No. of facilities meeting water quality objectives and water quantity demands	80	66	65	62	76
No. of facilities not meeting water quality objectives or water quantity demands, which require capital improvements	4	14	15	19	16
No. of facilities not meeting water quality objectives, which require operational improvements or other actions	7	9	18	14	8
Operational improvements underway at year-end	N/A	N/A	N/A	12	6
Operational improvements completed	N/A	N/A	N/A	N/A	6
Population serviced by facilities not meeting drinking water quality objectives				436,790	31,345

Of the 95 Ministry communal water supply facilities operated in 1982-83, and the 100 facilities expected to be operating in 1983-84, 33 and 24 facilities, respectively, require remedial measures during 1982-83 and 1983-84. A summary of the failures identified and the remedial measures initiated or to be initiated for Ministry water supply facilities is found below.

PRIMARY REASON FOR FAILURE TO MEET OBJECTIVES	1982-83 PRELIMINARY ACTUAL		1983-84 PROPOSED	
	FAILURES IDENTIFIED	REMEDIAL MEASURES	FAILURES IDENTIFIED	REMEDIAL MEASURES UNDERWAY
1. Raw Water Characteristics	5	1 process control improvements underway 2 engineering study phase 1 final design phase 1 no action	4	2 under construction 1 construction completed 1 no action
2. Treated Water Characteristics or Distribution	14	2 construction completed 2 engineering study phase 1 final design phase 2 under construction 1 replacement of distribution systems underway 1 minor deviations - no remedial measures are required 5 aesthetic problem only - no action planned	12	2 final design phase 3 under construction 1 replacement of distribution system underway 1 minor deviations - no remedial measures are required 5 aesthetic problem only - no action planned
3. Maintenance and/or Operation	3	2 operator training is being provided 1 implementing an operations control program	0	
4. Process and/or Equipment	2	1 process control improvements underway 1 existing equipment/operation is being repaired	0	
5. Other	9	1 engineering study phase 4 inplant sampling is being modified 2 reduce winter bleeding 2 no action	8	1 construction completed 4 remedial measures being evaluated 2 reduce winter bleeding 1 no action
TOTAL	33		24	

Program Effects

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed

- Adequate quantities of water support continued growth of the Provincial economy, including the development of new housing stock.
- Adequate quality of drinking water is directly correlated with benefits to public health. Future reports will attempt to quantify these benefits.

EFFICIENCY

Operational Efficiency

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
Cost/m^3 Drinking Water (¢)	6.2	6.9	7.2	7.5	7.7
Pumpage/Operator (10^3 m^3/D)	3.04	3.32	3.18	3.21	3.22

Program Efficiency

	1982-83 Preliminary Actual	1983-84 Proposed
% of overall capacity of facilities meeting drinking water quality objectives	69.7%	97.6%

RESOURCES

	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
. Expenditures ($000's)	17,616.4	21,270.2	21,458.2	22,939.0
. Person-Years	233.0	257.5	245.5	261.0
. Revenue ($000's)	18,400.0	21,000.0	21,000.0	22,000.0

MBR PROJECT ON WATER SERVICING INFRASTRUCTURE

OBJECTIVE

To assist municipalities in the construction of private or communal water works in order to:

- provide safe drinking water
- solve water supply problems
- increase the supply of serviced lots and provide for urban growth.

DESCRIPTION

The resources assigned to this MBR project include:

- the Ministry's capital budgets for water servicing infrastructure development,
- funds for the repair of concrete water tanks,
- the person-years and budget of Environmental Approvals and Project Engineering Branch and of the Regions in the preliminary development stages and the approval stages of water servicing projects,
- the person-years and budget of Environmental Approvals and Project Engineering Branch associated with the engineering and construction of water servicing facilities and systems, and
- the person-years and budget of Capital Financing and Revenue Branch associated with water servicing capital expenditures and revenue collection.

WORKLOAD

Program clients include all municipalities with population densities sufficient to justify a communal water servicing infrastructure and municipalities with widespread private well contamination which cannot be resolved by individual actions.

RESULTS

Operational Outputs:

	1981-82		1982-83 Planned		1982-83 Preliminary Actual		1983-84 Proposed	
	Ongoing	Completed	Ongoing	Completed	Ongoing	Completed	Ongoing	Completed
Disbursement Projects	20	16	13	8	14	9	Proposed Results will be transmitted to Management Board when the final selection of projects to be funded is made.	
Up-Front Grant Projects	63	118	71	121	79	111		
Low Cost Alternative Projects	13	29	8	49	15	37		
Total:	96	163	92	178	108	157		

Program Outputs:

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
Total number of urban expansion needs, water quality and water supply problems identified as requiring capital expenditures for correction *	N/A	350	1982-83 Planning Report only identified projects carried over from previous years. Figures are therefore not comparable.	294	Same as above
Number of urban expansion needs, water supply and water quality problems resolved during the year by project completions	34	51		149	
Number of urban expansion needs, water supply and water quality problems being addressed but incomplete at year-end	75	111		108	
Number of urban expansion needs, water supply and water quality problems not being addressed within funding allocation	N/A	188		37	

* A need or problem is considered identified when submissions by municipalities to MOE have been approved as eligible for grants.

BREAKDOWN OF 1982-83 PRELIMINARY ACTUAL DATA BY FUNDING TYPE AND PROBLEM IDENTIFICATION

	Disbursement Projects	Up-Front Grant Projects	Low Cost Alternative Projects
Private Well Contamination	12	73	43
Resolved this year	4	32	28
Incomplete	8	25	13
Not Addressed	-	16	2
Communal Water Contamination	7	29	37
Resolved this year	3	12	24
Incomplete	4	11	10
Not Addressed	-	6	3
Water Shortages	15	27	21
Resolved this year	4	13	14
Incomplete	11	8	6
Not Addressed	-	6	1
Water Nuisance Problems	3	15	3
Resolved this year	1	6	3
Incomplete	2	6	-
Not Addressed	-	3	-
Local Development Delays	-	3	-
Resolved this year	-	2	-
Incomplete	-	1	-
Not Addressed	-	-	-
Other	1	2	3
Resolved this year	-	1	2
Incomplete	1	1	1
Not Addressed	-	-	-
TOTAL PROBLEMS	38	149	107
Resolved this year	12	66	71
Incomplete	26	52	30
Not Addressed	-	31	6

Program Effects:

(1) The overall adequacy of the Province's water servicing infrastructure is as follows:

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
Infrastructure Capacity (Maximum Daily Pumpage in 10^3 m^3/D)	9,168	9,710	10,600	9,841	9,886
Water Demands (Average Daily Pumpage in 10^3 m^3/D)	4,559	4,878	5,340	4,964	5,078

(2) There are a variety of social and economic consequences of meeting local water supply and water quality needs. These will be identified in future reports.

EFFICIENCY

Indicators not developed.

RESOURCES

	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
. Expenditures ($000's)	72,693.0	64,329.0	58,752.0	50,139.9
. Person-Years	33.5	31.5	31.5	31.5
. Revenue ($000's)	74,732.6	51,780.0	51,839.0	42,376.0

MBR PROJECT ON SEWAGE SERVICING INFRASTRUCTURE

OBJECTIVE

To assist municipalities in the construction of private or communal sewage services in order to:

- prevent public health and environmental pollution problems
- increase the supply of serviced lots and provide for urban growth.

DESCRIPTION

The resources assigned to this MBR project include:

- the Ministry's capital budgets for sewage servicing infrastructure development,
- the person-years and budget of Environmental Approvals and Project Engineering Branch and of the Regions associated with the preliminary development stages and the approval stages of sewage projects,
- the person-years and budget of Environmental Approvals and Project Engineering Branch associated with the engineering and construction of sewage treatment facilities and systems, and
- the person-years and budget of Capital Financing and Revenue Branch associated with sewage treatment capital expenditures and revenue collection.

WORKLOAD

Program clients include all municipalities with population densities sufficient to justify a communal sewage servicing infrastructure and municipalities with widespread septic tank defects which cannot be resolved by individual actions.

RESULTS

Operational Results:

	1981-82		1982-83 Planned		1982-83 Preliminary Actual		1983-84 Proposed	
	Ongoing	Completed	Ongoing	Completed	Ongoing	Completed	Ongoing	Completed
Disbursement Projects	41	26	22	19	20	21	Proposed Results will be transmitted to Management Board after the final selection of projects to be funded is made.	
Up-Front Grant Projects	49	98	70	85	77	88		
Low Cost Alternative Projects	15	34	9	47	18	37		
Total:	105	158	101	151	115	146		

Program Outputs:

	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
Total number of urban expansion needs and water quality problems identified as requiring capital expenditures	423	1982-83 Planning Report only identified project carried over from previous years.	366	See above
Number of urban expansion needs and water quality problems met during the year by project completions	63	Figures are therefore not comparable.	172	
Number of urban expansion needs and water quality problems being addressed, but incomplete at year-end	139		145	
Number of urban expansion needs and water quality problems not being addressed within funding allocation	221		49	

BREAKDOWN OF 1982-83 PRELIMINARY ACTUAL DATA BY FUNDING TYPE AND PROBLEM IDENTIFICATION

	Disbursement Projects	Up-Front Grant Projects	Low Cost Alternative Projects
Septic Tank Problems	17	17	38
Resolved this year	10	7	21
Incomplete	7	6	12
Not Addressed	-	4	5
Communal Sewage Collection Problem	16	87	9
Resolved this year	7	36	5
Incomplete	9	33	4
Not Addressed	-	18	-
Inadequate Sewage Treatment	27	16	7
Resolved this year	14	8	3
Incomplete	13	8	3
Not Addressed	-	-	1
Inferior Water Quality	21	29	33
Resolved this year	10	11	20
Incomplete	11	12	5
Not Addressed	-	6	8
Local Development Delays	-	17	23
Resolved this year	-	7	9
Incomplete	-	6	12
Not Addressed	-	4	2
Other	2	3	4
Resolved this year	-	1	3
Incomplete	2	1	1
Not Addressed	-	1	-
TOTAL PROBLEMS	83	169	114
Resolved this year	41	70	61
Incomplete	42	66	37
Not Addressed	-	33	16

Program Effects:

The overall adequacy of the Province's sewage servicing infrastructure is as follows:

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
Infrastructure Capacity (Maximum Daily Flow 10^3 m^3/D)	5,759	5,800	6,323	5,890	6,025
Service Demands (Average Daily Flow 10^3 m^3/D)	4,377	4,402	4,777	4,495	4,587

There are a variety of social and economic consequences of meeting local sewage servicing needs. These will be identified in future reports.

EFFICIENCY

Indicators not developed

RESOURCES

	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
. Expenditures ($000's)	145,923.7	129,251.0	118,136.0	100,843.0
. Person-Years	82.5	79.5	79.5	79.5
. Revenue ($000's)	102,322.6	70,051.0	69,817.0	44,405.0

MBR PROJECT ON THE OPERATION OF MINISTRY SEWAGE TREATMENT FACILITIES

OBJECTIVE

To operate all sewage treatment facilities owned by the Ministry of the Environment and to undertake any in-plant remedial measures required to ensure that sewage effluents meet public health and environmental protection needs.

DESCRIPTION

The resources assigned to this MBR project include:

- the person-years and budgets required to operate Ministry-owned sewage treatment facilities,
- the person-years and budgets of the Regions relating to the overall management of these facilities, and
- the person-years and budget of Capital Financing and Revenue Branch associated with the collection of operating revenues.

WORKLOAD

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
No. of Facilities Operated	216	222	236	221	228

The chart below summarizes information on the number of plants, capacity and actual flow of Ministry sewage treatment facilities by treatment type.

Treatment Type	1981			1982 ESTIMATED			1983 PROJECTED		
	No. of Plants	Capacity ($10^3 m^3/d$)	Actual Flow	No. of Plants	Capacity ($10^3 m^3/d$)	Actual Flow	No. of Plants	Capacity ($10^3 m^3/d$)	Actual Flow
Primary	10	149	N/A	9	145	N/A			
Secondary	95	1,022	N/A	95	1,022	N/A	No Data Available		
Lagoons	117	148	N/A	117	148	N/A			
TOTAL	222	1,319	919.0	221	1,315	1,206.0	228	N/A	1,230.0

NOTE: All flow information reported in $10^3 m^3/d$.

RESULTS

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
Program Outputs					
Flow (10^3 m^3/D)	882.0	919.0	1,182.0	1,206.0	1,230.0
No. of facilities meeting effluent objectives	150	177	172	158	180
No. of facilities not meeting effluent objectives, which require capital improvements	34	24	29	37	27
No. of facilities not meeting effluent objectives, which require operational improvements or other actions	6	7	15	26	14
Operational improvements underway at year-end	3	4	7	9	4
Operational improvements completed	2	2	4	4	0
Population serviced by facilities not meeting effluent requirements				674,216	468,725

Of the 221 Ministry sewage treatment facilities operated in 1982-83, and the 228 facilities expected to be operating in 1983-84, 63 and 41 facilities, respectively, require remedial measures during 1982-83 and 1983-84. A summary of the failures identified and the remedial measures initiated or to be initiated for Ministry sewage treatment facilities is found below.

REMEDIAL MEASURES - MINISTRY SEWAGE TREATMENT PLANTS

PRIMARY REASON FOR FAILURE TO MEET OBJECTIVES	1982-83 PRELIMINARY ACTUAL		1983-84 PROPOSED	
	FAILURES IDENTIFIED	REMEDIAL MEASURES	FAILURES IDENTIFIED	REMEDIAL MEASURES UNDERWAY
1. Influent Sewage Characteristics	26	1 under discussion with municipality 2 engineering study phase 5 final design phase 3 funding under review 6 under construction 2 environmental assessment process 1 enforcing by-laws 3 start-up difficulties being remedied 2 other 1 funding approval rejected - project halted	18	2 under discussion with municipality 2 engineering study phase 7 under construction 4 construction completed 1 collection system deficiency under study 1 environental assessment process 1 funding approval rejected - project halted
2. Collecting System Problems	6	1 collection system deficiency under study 1 completing the collection system and encouraging connections 3 sewer repairs underway 1 sewer separation underway	5	1 infiltration problems are being corrected 3 sewer repairs underway 1 sewer separation underway
3. Maintenance and/or Operation	6	2 operation and/or maintenance procedures being implemented 2 inplant sampling is being modified 1 assimilation study underway 1 final design phase	3	1 upgrading completed 1 assimilation study underway 1 final design phase
4. Process and/or Equipment	9	1 engineering study phase 1 implementing an operations control program 1 phosphorous removal operation under review 2 new equipment is being installed 2 existing equipment/operation is being modified 1 existing equipment/operation is being repaired 1 process control improvements is underway	4	1 engineering study phase 1 implementing an operations control program 1 remedial measures being evaluated 1 process control improvements underway
5. Sludge Removal	2	2 developing new and/or improved methods of dealing with sludge	0	
6. Other	3	1 start-up difficulties being remedied 1 marginal failure - continue to maintain and monitor level of failed parameter closely 1 no action	0	
7. Not Related to Plant Performance	11	1 operation and/or maintenance procedures being implemented 1 conducting treatability studies 9 no action	11	1 under discussion with municipality 1 remedial measures being evaluated 9 no action
TOTAL	63		41	

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
Program Effects					
. Adequate sewage capacity supports continued growth of the Provincial economy, including the development of new housing stock.					
. Adequate sewage treatment is directly correlated with benefits to public health. Future reports will attempt to quantify these benefits.					
EFFICIENCY					
Cost/m^3 sewage (¢)	9.3	9.9	9.1	9.2	10.1
Flow Processed/Operator (10^3 m^3/D)	1.943	2.056	2.430	2.552	2.412
Program Efficiency					
% of overall capacity of facilities meeting effluent objectives				59.7%	87.0%
RESOURCES					
. Expenditures ($000's)		32,430.3	39,071.4	40,350.0	45,958.4
. Person-Years		447.0	486.5	472.5	528.0
. Revenue ($000's)		33,000.00	39,000.0	39,350.0	44,345.0

MBR PROJECT ON THE MANAGEMENT OF POINT SOURCES OF AIR AND WATER POLLUTION

NOTE

The Abstract of 1983-84 Plans (January, 1983) includes separate MBR project data for point sources of air pollution and point sources of water pollution to facilitate the description of "program outputs" and "program effects". In this Report, focus is placed on the individual facilities themselves. It is consequently necessary to aggregate these two MBR projects.

OBJECTIVE

To ensure that point sources of air pollution in Ontario limit their emissions to quantities and rates which will protect the natural environment, human health and well-being.

To ensure that point sources of water pollution in Ontario limit their discharges to quantities and rates which will protect the natural environment, human health and well-being and which will allow the greatest number of beneficial water uses.

DESCRIPTION

This MBR project measures: (1) Industrial emissions to the atmosphere; (2) Direct industrial discharges to Provincial watercourses; and (3) Communal sewage treatment plant discharges to Provincial watercourses.

This project consists of:

- work related to the assessment of the health and environmental effects of contaminants emitted to air, and the development of standards where required,
- work related to the assessment of the health and environmental effects of contaminants discharged to surface water, and the development of standards where required,
- work related to monitoring the compliance of point sources of air pollution with standards and developing abatement plans for non-compliance situations,
- work related to monitoring the compliance of point sources of water pollution with standards and developing abatement plans for non-compliance situations,
- work related to the monitoring of air quality affected by point sources of air pollution,
- work related to the monitoring of surface water quality affected by point sources of water pollution, and
- work related to public enquiries and complaints.

WORKLOAD

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
No. of industrial point sources in Ontario	11,000	11,000	11,000	11,000	11,000
No. of air contaminants of concern (approx.)	N/A	N/A	N/A	100	100
No. of air contaminants under MBR reporting	3	3	4	6	6
No. of water contaminants of concern (approx.)	N/A	N/A	N/A	400	400
No. of water contaminants under MBR reporting	7	7	10	12	12
No. of industrial facilities under MBR reporting	133	235	235	272	267
No. of communal sewage treatment plants (approx.)	863	890	910	894	901
No. of sewage treatment facilities under MBR reporting	363	390	410	394	401

MAGNITUDE OF EMISSIONS

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
(1) Industrial Air Emissions:					
Total emissions of suspended particulates, sulphur dioxide and nitrogen oxides (Mg/day)	<4,656 (70)*	<4,850 (62)*	<5,309 (58)*	<4,853 (73)*	<5,038 (70)*
(2) Direct Industrial Discharges:					
Total discharges of suspended solids, oxygen demand and phosphorus (Mg/day)	<994.3 (79)*	<968.8 (72)*	<740.1 (62)*	<831.5 (87)*	<580.3 (79)*
(3) Communal Sewage Treatment Plant Discharges:					
Total discharges of suspended solids, oxygen demand and phosphorus (Mg/day)	182.7	173.6	N/A	178.6	189.0

* Numbers in brackets indicate the number of industrial point sources contributing to total emission figures. Every major emitter is included.

RESULTS:

Operational Outputs

(1) Industrial Air Emissions and (2) Direct Discharges to Provincial Watercourses

For the 1983-84 Planning Cycle, the atmospheric emissions and discharges to watercourses of 12 industrial sectors are evaluated relative to Ministry objectives. These 12 industrial sectors include:

- Iron and Steel Mills
- Pulp and Paper Mills
- Petroleum Refineries
- Cement Manufacturing
- Metal Mines
- Thermal Generating Stations
- Non-Ferrous Smelting and Refining
- Fish Products Industry
- Plastics and Synthetic Resins Manufacturers
- Industrial Chemicals Manufacturers
- Abrasives Manufacturers
- Metal Stamping, Pressing and Coating Industries.

The identity of the specific firms within the above-noted industrial sectors are given in Appendix A.

The data on pages 30 to 77 indicates for each sector:

- the number of facilities,
- production levels,
- air emission and water discharge levels
- the status of compliance with environmental objectives for particulates, sulphur dioxide, nitrogen oxides, hydrocarbons, hydrogen sulphide, noise, suspended solids, oxygen demands, ether solubles, phenols, ammonia, cyanide, heavy metals, radium 226, uranium, phosphorous, total organic carbon, and toxicity (where these parameters are applicable to the respective sectors).

A facility is identified as being substantially in compliance with a particular environmental objective either if adequate monitoring data is available on which an analytical evaluation of compliance can be made, or if there is an absence of other information that would be associated with a non-compliance situation.

The evaluation is not intended to identify short-term failures to meet objectives. Therefore environmental damages and nuisance conditions may still occur when facilities are in "substantial compliance".

SECTOR: **IRON AND STEEL MILLS**

S.I.C. No: 291

	1971	1972	1973	1974	1975	1976	1977
No. of Facilities:	18	17	17	17	18	17	19
Capacity:		----------	Data Incomplete		----------		
Production:							
Pig Iron (Million Mg)	7.8	8.5	9.5	9.4	9.4	9.8	9.7
Steel Ingots (Million Mg)	10.9	11.7	13.2	13.4	12.8	13.1	13.5
Estimated Capital Expenditure for Environmental Protection ($ Millions)	13.0	2.2	3.8	5.8	4.8	5.2	0.4

Notes: No. of Facilities: Figures prior to 1982 from Statistics Canada Catalogue 41-203 (Annual)
Production: Figures prior to 1982 from Statistics Canada Catalogue 41-002 (Monthly). of Ontario, and the majority of steel ingot production is in Ontario.
Estimated Capital Expenditures: Applications for Certificates of Approval, Industrial Approvals Section,

EMISSIONS	1971	1972	1973	1974	1975	1976	1977
Air Emissions (Mg/day):							
Particulates							28.0
Sulphur Dioxide							
Noise							
Direct Discharges to Watercourses (Mg/day):							
Oxygen Demand	44.0		34.0				15.0
Suspended Solids	77.6		95.0				79.0
Ether Solubles	12.2		12.7				10.2
Phenols	0.953		0.796				0.263
Ammonia							9.5
Cyanide	3.969		2.043				2.448
Heavy Metals	13.4		24.443				21.464

1978	1979	1980	1981	1982	1983
20	20	23	23	23	23
	---------- Data Incomplete ----------				
10.3	10.9	10.9	9.7	8.0	
14.8	14.5	14.4	14.6	11.8	
4.8(Air)	0.8(Air)	43.2(Air)	38.5(Air)	4.9(Air)	
5.4(Water)	15.4(Water)	14.7(Water)	53.9(Water)	3.0(Water) (prel.)	

"Iron and Steel Mills".
Although the figures reported are national totals, there are no known producers of pig iron outside

Environmental Approvals Branch, Ministry of the Environment.

1978	1979	1980	1981	1982 Planned	1982 Preliminary Actuals	1983 Proposed
28.6	28.9 (7)	30.1 (9)	<25.36 (9)	16.3 (8)	<25.48 (9)	<23.59 (9)
	631.5 (7)	444.4 (11)	564.27 (9)	415.3 (8)	<265.98 (8)	<395.25 (8)
					not (12) applicable	not (12) applicable
13.3	13.4 (6)	9.3 (6)	<11.13 (7)	6.2 (6)	<7.84 (7)	<8.28 (7)
75.8	90.1 (7)	45.3 (7)	54.5 (7)	38.4 (6)	<36.42 (7)	<30.23 (7)
7.8	6.3 (7)	6.4 (7)	<5.898 (7)	4.9 (6)	<2.249 (6)	<4.678(7)
0.379	0.445 (6)	0.406 (6)	0.421 (7)	0.217 (4)	<0.295 (7)	<0.271(7)
8.8	11.2 (5)	11.8 (6)	7.68 (5)	8.0 (5)	<5.60 (4)	<6.23 (5)
4.862	2.766 (5)	1.127 (6)	0.730 (5)	0.761 (5)	<0.242 (5)	<0.242(5)
17.933	22.221 (7)	13.327 (7)	11.207 (7)	6.503 (6)	<14.264 (7)	<7.498(6)

No. of Facilities in Ontario in 1982 based on Statistics Canada data : 23
Corrected No. of Facilities used for MBR evaluation (listed on page A-2): 12
No. of Facilities with a direct discharge to a watercourse in 1982 : 7

Contaminant	No. of Assessable Facilities	FORECAST 1982 COMPLIANCE			PRELIMINARY	
		No. of Facilities which are Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities which are NOT Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Not Forecast	No. of Assessable Facilities	No. of Facilities which were Substantially in Compliance with Environmental Objectives
Particulates	13	6	3	4	12	9
Sulphur Dioxide	13	12	1	0	12	11
Noise	13	---------- Data Not Available ----------			12	5
Oxygen Demand	7	7	0	0	7	7
Suspended Solids	7	3	3	1	7	3
Ether Solubles	7	5	1	1	7	6
Phenols	7	3	3	1	7	4
Ammonia	7	4	2	1	7	3
Cyanide	7	4	2	1	7	4
Heavy Metals	7	4	2	1	7	5

NOTE: The number of assessable facilities decreased in 1982 due to the exclusion of Welmet Metal Industries of Welland from the "Iron and Steel" industrial category.

1982 COMPLIANCE			FORECAST 1983 COMPLIANCE		
No. of Facilities which were NOT Substantially In Compliance with Environmental Objectives	No. of Facilities where Compliance was Unknown	No. of Assessable Facilities	No. of Facilities which are Expected to be Substantially In Compliance with Environmental Objectives	No. of Facilities which are NOT Expected to be Substantially In Compliance with Environmental Objectives	No. of Facilities where Compliance is Not Forecast
3	0	12	9	3	0
1	0	12	11	1	0
0	7	12	5	0	7
0	0	7	7	0	0
4	0	7	4	3	0
1	0	7	6	1	0
3	0	7	5	2	0
3	1	7	4	2	1
1	2	7	4	1	2
2	0	7	5	1	1

Abatement Measures for Non-Complying Facilities

- Dofasco (Hamilton) is reviewing technologies for sulphur dioxide removal.
- Stelco (Nanticoke) has proposed increases in effluent loadings on Certificates of Approval for suspended solids and ammonia.
- Control orders are in effect for all other facilities not in compliance with objective criteria.

SECTOR: **PULP AND PAPER MILLS**

S.I.C. No: 271

	1971	1972	1973	1974	1975	1976	1977
No. of Facilities:	37	37	37	37	37	37	37
Capacity:	----------		Not Available		----------		
Production:							
Woodpulp (Million Mg)	3.4	3.6	3.7	3.9	2.5	3.1	3.7
Basic paper and paper boards (Million Mg)	2.8	2.9	3.2	3.4	2.1	2.6	3.1
Estimated Capital Expenditure for Environmental Protection ($ Millions)	6.5	13.4	5.3	6.0	3.4	4.5	16.5

Notes: No. of Facilities and Production: Figures prior to 1982 from Statistics Canada Catalogue 36-204 (Annual)

Estimated Capital Expenditures: From Applications for Certificates of Approval, Industrial Approvals

EMISSIONS	1971	1972	1973	1974	1975	1976	1977
Air Emissions (Mg/day):							
Particulates							
Sulphur Dioxide							
Direct Discharges to Watercourses (Mg/day):							
Oxygen Demand	942.1		820.0				787.0
Suspended Solids	429.8		248.0				235.0
Toxicity							

1978	1979	1980	1981	1982	1983
37	37	37	37	37	36
----------	Not Available		----------		
4.1	4.3	4.0	4.4	N/A	
3.2	3.5	3.2	3.5	N/A	
7.0(Air)	1.4(Air)	6.6(Air)	11.7(Air)	11.5(Air)	
3.6(Water)	43.9(Water)	25.2(Water)	34.5(Water)	19.8(Water) (prel.)	

"Pulp and Paper Mills".

Section, Environmental Approvals Branch, Ministry of the Environment.

1978	1979	1980	1981	1982 Planned	1982 Preliminary Actuals	1983 Proposed
		<56.9 (28)	78.66 (24)	<69.4 (22)	<67.72 (20)	<55.23 (17)
			<8.0 (3)	<7.5 (3)	<67.73 (20)	<49.20 (16)
769.3	778.9 (28)	727.8 (28)	723.4 (28)	580.6 (24)	640.66 (28)	<393.43 (23)
217.1	248.1 (28)	198.8 (28)	170.3 (28)	106.5 (25)	<120.77 (27)	<125.68 (27)
					N/A (28)	N/A (27)

No. of Facilities in Ontario in 1982 based on Statistics Canada data : 37
Corrected No. of Facilities used for MBR evaluation (listed on page A-1): 37
No. of Facilities with a direct discharge to a watercourse in 1982 : 28*

Contaminant	No. of Assessable Facilities	FORECAST 1982 COMPLIANCE			PRELIMINARY	
		No. of Facilities which are Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities which are NOT Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Not Forecast	No. of Assessable Facilities	No. of Facilities which were Substantially in Compliance with Environmental Objectives
Particulates	36**	29	5	2	36**	27
Sulphur Dioxide	3	2	1	0	36	27
Oxygen Demand	26***	16	9	1	26***	17
Suspended Solids	28	22	6	0	28	23
Toxicity	28	---------- Data Not Available ----------			28	9

* Kapuskasing mills of Spruce Falls Power and Paper and Kimberley-Clark assessed as one direct discharger.

** Kimberley-Clark (Kapuskasing) not assessed since boiler house capability is provided by Spruce Falls Power and Paper.

*** 3 Abitibi-Price mills in Thunder Bay are subject to a single control order for Oxygen Demand.

(1) C.I.P. plant in Hawkesbury is closing in 1983.

1982 COMPLIANCE			FORECAST 1983 COMPLIANCE		
No. of Facilities which were NOT Substantially In Compliance with Environmental Objectives	No. of Facilities where Compliance was Unknown	No. of Assessable Facilities	No. of Facilities which are Expected to be Substantially In Compliance with Environmental Objectives	No. of Facilities which are NOT Expected to be Substantially In Compliance with Environmental Objectives	No. of Facilities where Compliance is Not Forecast
		(1)			
4	5	35	26	4	5
3	6	35	28	2	5
9	0	25	21	3	1
5	0	27	24	3	0
13	6	27	11	4	12

Abatement Measures for Non-Complying Facilities

- Abitibi Price (Sault Ste. Marie) has no present abatement program for particulate emissions.
- Control orders or other abatement programs are in effect for all other facilities not in compliance with objective criteria.

SECTOR: **PETROLEUM REFINING**

S.I.C. No: 365

	1971	1972	1973	1974	1975	1976	1977
No. of Facilities:	7	7	7	7	7	7	9
Capacity:		---------- Not Available ----------					
Production: (Million barrels crude oil)		136.5	150.1	165.2	162.1	165.7	183.9
Estimated Capital Expenditure for Environmental Protection ($ Millions)	2.1	4.7	3.5	5.4	6.0	24.6	10.7

Notes: No. of Facilities: Figures prior to 1983 from Statistics Canada Catalogue 45-205 (Annual)
Production: Figures from Statistics Canada Catalogue 45-004 (Monthly)

Estimated Capital Expenditures: From Applications for Certificates of Approval, Industrial Approvals expenditures in addition to refineries.

EMISSIONS	1971	1972	1973	1974	1975	1976	1977
Air Emissions (Mg/day):							
Particulates						13.1	14.3
Sulphur Dioxide						230.6	241.2
Direct Discharges to Watercourses (Mg/day):							
Suspended Solids							9.8
Ether Solubles							<2.4
Phenols							0.037
Toxicity							

1978	1979	1980	1981	1982	1983
11	11	11	11	11	7
---------- Not Available ----------					
197.2	219.8	220.7	224.2	190.9	
3.6(Air) 0.1(Water)	0.0(Air) 0.5(Water)	3.7(Air) 5.0(Water)	2.1(Air) 30.3(Water)	4.4(Air) 10.1(Water) (prel.)	

Section, Environmental Approvals Branch, Ministry of the Environment. Figures include petrochemical

1978	1979	1980	1981	1982 Planned	1982 Preliminary Actuals	1983 Proposed
14.3	15.7 (9)	14.8 (9)	13.65 (8)	16.1 (8)	15.16 (8)	14.68 (8)
243.2	206.0 (9)	204.3 (9)	221.0 (8)	208.3 (8)	200.25 (8)	192.00 (8)
4.6	<3.8 (9)	<3.9 (9)	<2.98 (8)	<2.38 (8)	4.173 (8)	1.517 (8)
<1.4	<1.6 (9)	<1.3 (9)	<.584 (8)	<0.71 (8)	<0.535 (8)	<0.496 (8)
0.024	<0.048 (9)	<0.049 (9)	<.025 (8)	<0.019 (8)	<0.017 (8)	<0.010 (8)
			N/A	N/A	N/A (8)	N/A (8)

No. of Facilities in Ontario in 1982 based on Statistics Canada data : 11
Corrected No. of Facilities used for MBR evaluation (listed on page A-2): 8
No. of Facilities with a direct discharge to a watercourse in 1982 : 8

Contaminant	No. of Assessable Facilities	FORECAST 1982 COMPLIANCE			PRELIMINARY	
		No. of Facilities which are Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities which are NOT Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Not Forecast	No. of Assessable Facilities	No. of Facilities which were Substantially in Compliance with Environmental Objectives
Particulates	8	8	0	0	8	8
Sulphur Dioxide	8	8	0	0	8	8
Suspended Solids	8	8	0	0	8	7
Ether Solubles	8	7	1	0	8	7
Phenols	8	7	1	0	8	8
Toxicity	8	8	0	0	8	8

1982 COMPLIANCE			FORECAST 1983 COMPLIANCE		
No. of Facilities which were NOT Substantially In Compliance with Environmental Objectives	No. of Facilities where Compliance was Unknown	No. of Assessable Facilities	No. of Facilities which are Expected to be Substantially In Compliance with Environmental Objectives	No. of Facilities which are NOT Expected to be Substantially In Compliance with Environmental Objectives	No. of Facilities where Compliance is Not Forecast
0	0	8	8	0	0
0	0	8	8	0	0
1	0	8	8	0	0
1	0	8	8	0	0
0	0	8	8	0	0
0	0	8	8	0	0

Abatement Measures for Non-Complying Facilities

- Shell Oil (Corunna) is expected to be in compliance with suspended solids objectives in 1983. Malfunction led to non-compliance for 6 months of 1982.
- Gulf Oil (Mississauga) will be completing a new biological plant in 1983 and is expected to meet objective criteria for ether solubles.

SECTOR: **CEMENT MANUFACTURING**

S.I.C. No: 352

	1971	1972	1973	1974	1975	1976	1977
No. of Facilities:	6	6	6	7	7	7	7
Capacity:	---------- Not Available ----------						
Production: (Million Mg)	3.2	3.4	3.9	4.2	4.0	3.7	3.7
Estimated Capital Expenditure for Environmental Protection ($ Millions)	----------No Figures Available ----------						

Notes: No. of Facilities: Figures prior to 1982 from Statistics Canada Catalogue 44-204 (Annual)
Production: Figures from Statistics Canada Catalogue 26-202 (Annual)

EMISSIONS	1971	1972	1973	1974	1975	1976	1977
Air Emissions (Mg/day):							
Particulates	(Data Incomplete Prior to 1979						
Sulphur Dioxide*	(						
Direct Discharges to Watercourses (Mg/day):	No Significant Discharges						

* NOTE: Figures previously provided for Canada Cement (Bath) and Lake Ontario Cement (Picton) have been revised downward as a result of recalculated emission rates.

1978	1979	1980	1981	1982	1983
7	8	7	7	7	7
---------- Not Available ----------					
3.9	3.9	3.4	3.6	N/A	
---------- No Figures Available ----------					

No changes have been identified in the following years.

1978	1979	1980	1981	1982 Planned	1982 Preliminary Actuals	1983 Proposed
	28.6 (8)	16.6 (7)	16.5 (6)	10.9 (7)	11.13 (6)	11.79 (7)
	21.4 (8)	22.2 (7)	19.2 (6)	22.8 (7)	19.26 (6)	19.46 (7)

No. of Facilities in Ontario in 1982 based on Statistics Canada data : 7
Corrected No. of Facilities used for MBR evaluation (listed on page A-4): 7
No. of Facilities with a direct discharge to a watercourse in 1982 : Not Applicable

Contaminant	No. of Assessable Facilities	FORECAST 1982 COMPLIANCE			PRELIMINARY	
		No. of Facilities which are Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities which are NOT Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Not Forecast	No. of Assessable Facilities	No. of Facilities which were Substantially in Compliance with Environmental Objectives
Particulates	7	6	1	0	7	6
Sulphur Dioxide	7	7	0	0	7	7

1982 COMPLIANCE			FORECAST 1983 COMPLIANCE		
No. of Facilities which were NOT Substantially In Compliance with Environmental Objectives	No. of Facilities where Compliance was Unknown	No. of Assessable Facilities	No. of Facilities which are Expected to be Substantially In Compliance with Environmental Objectives	No. of Facilities which are NOT Expected to be Substantially In Compliance with Environmental Objectives	No. of Facilities where Compliance is Not Forecast
1	0	7	6	1	0
0	0	7	7	0	0

Abatement Measures for Non-Compliance Facilities

- Federal White Cement (Woodstock) will redo stack testing to see if a control order is required to meet particulate objectives.

SECTOR: **METAL MINES**

S.I.C. No: 051, 052, 057, 058, 159

	1971	1972	1973	1974	1975	1976	1977
No. of Facilities:	Data Not Available Prior to 1978						
Capacity:	---------- Not Available ----------						
Production:							
Precious Metals (Million kg)	-	-	0.64	0.58	0.49	0.53	0.55
Cu, Ni, Pb, Zn (" ")	811.6	804.2	863.5	937.6	778.9	771.7	763.5
Iron Ore (Million Mg)	10.1	10.7	11.3	10.9	9.5	10.1	10.3
Uranium (Million Mg)	3.2	3.8	3.7	3.8	4.8	4.4	4.3
Estimated Capital Expenditure for Environmental Protection ($ Millions)	See Notes concerning Smelting and Refining Sector (p.)						

Notes: No. of Facilities: 1978 figures from A Water Pollution Status Report - Active Mining
Production: Figures from Statistics Canada Catalogue 26-202 (Annual)

EMISSIONS	1971	1972	1973	1974	1975	1976	1977
Air Emissions (Mg/day):							
Particulates	No Data available						
Direct Discharges to Watercourses (Mg/day):							
Cyanide	0.567		0.725				0.040
Heavy Metals							
Suspended Solids	22.3		17.0				
Ammonia							

1978	1979	1980	1981	1982	1983
41	38	40	35	27	25
	---------- Not Available ----------				
0.465	0.45	0.48	0.36	N/A	
573.7	564.57	661.9	604.3	N/A	
9.4	8.2	6.5	5.3	N/A	
5.25	4.42	4.3	4.7	N/A	

Operations in the Province of Ontario, M.O.E., July 1978.

1978	1979	1980	1981	1982 Planned	1982 Preliminary Actuals	1983 Proposed
			N/A	N/A	0.0069 (1)	N/A (2)
0.710	0.039 (6)	0.09 (7)	0.1190 (7)	0.0101 (2)	0.1506 (7)	0.037 (1)
	<1.588 (30)	<1.554 (31)	<0.8282(25)	<0.6536(18)	<0.7443(23)	<2.2403(17)
	<14.2 (30)	<7.2 (32)	<4.288 (24)	<4.020 (20)	<4.352 (25)	<3.714 (18)
			1.412 (2)	N/A	2.851 (3)	2.730 (3)

No. of Facilities in Ontario in 1982 based on Statistics Canada data : Not Available
Corrected No. of Facilities used for MBR evaluation (listed on page A-3): 28
No. of Facilities with a direct discharge to a watercourse in 1982 : 25*

Contaminant	No. of Assessable Facilities	FORECAST 1982 COMPLIANCE			No. of Assessable Facilities	PRELIMINARY
		No. of Facilities which are Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities which are NOT Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Not Forecast		No. of Facilities which were Substantially in Compliance with Environmental Objectives
Particulates	2	Not Available			2**	1
Cyanide	8*	6	1	1	7**	4
Heavy Metals	27*	25	1	1	25**	20
Suspended Solids	27*	26	0	1	25**	20
Ammonia	3	Not Available			3	3

* Although 28 mines are assessed only 25 discharge directly to watercourses. This is becuase: Dickenson and Campbell Red Lake Mines (Balmerton) are jointly assessed; Canadaka Mines in Cobalt is temporarily closed; Falconbridge East Mine discharges to municipal services.

** Dickenson and Campbell Red Lake Mines (Balmerton) assessed jointly.

The number of assessable facilities decreased in 1982 due to the closing of several mines.

1982 COMPLIANCE			FORECAST 1983 COMPLIANCE		
No. of Facilities which were NOT Substantially In Compliance with Environmental Objectives	No. of Facilities where Compliance was Unknown	No. of Assessable Facilities	No. of Facilities which are Expected to be Substantially In Compliance with Environmental Objectives	No. of Facilities which are NOT Expected to be Substantially In Compliance with Environmental Objectives	No. of Facilities where Compliance is Not Forecast
0	1	2*	1	0	1
1	2	6*	5	1	0
3	2	23*	20	3	0
2	3	23*	18	1	4
0	0	3	3	0	0

Abatement Measures for Non-Complying Facilities

- No abatement programs exist for companies in non-compliance with objective criteria.
- However, control orders or other measures will likely be issued to:
  - Kerr Addison (Virginiatown) for exceedences of cyanide and heavy metals criteria
  - Campbell Red Lake Mines and Dickenson Mines (Balmerton) for exceedences of heavy metals and suspended solids criteria
  - Falconbridge (Strathcona) for exceedences of heavy metals criteria.

SECTOR: **THERMAL GENERATING STATIONS**

	1971	1972	1973	1974	1975	1976	1977
No. of Facilities:	6	6	6	7	7	7	6
Capacity: MW (Dec.Dep.Peak)	5,814	5,804	7,334	7,754	8,418	9,575	10,711
Production: GWh				26,229	27,638	31,697	33,633
Estimated Operating Expenditure for Environmental Protection* ($ Millions)							

Notes: No. of Facilities and Production: Figures from Ontario Hydro report entitled Estimates of Atmospheric
Capacity: Figures from Ontario Hydro report entitled Power Resource Report (1981)

EMISSIONS	1971	1972	1973	1974	1975	1976	1977
Air Emissions (Mg/day):							
Particulates	28.3		17.2	17.9	15.0	20.5	29.0
Sulphur Dioxide	1074.9		798.1	814.4	854.2	1008.4	1133.9
Nitrogen Oxide	142.7		127.9	151.8	169.5	160.2	166.4
Direct Discharges to Watercourses (Mg/day):	---------- Not Available ----------						

* Capital expenditure figures are not available. Instead, estimates have been provided for increased operating expenditures associated with pollution abatement efforts.

1978	1979	1980	1981	1982 Planned	1982 Preliminary Actuals	1983 Planned
6	7	7	7	7	7	6
11,308	11,488*	10,167**	10,421**	N/A	N/A	N/A
32,304	33,043	32,802	33,833	N/A	39,328	36,939
		2.6	4.5	N/A	4.8	N/A

Emissions from Ontario Hydro (Annual).

* Excludes 298 MW mothballed
** Excludes 1900 MW mothballed

1978	1979	1980	1981	1982 Planned	1982 Preliminary Actuals	1983 Proposed
26.5	22.7	22.5	23.0	N/A	8.1	7.9
1193.7	1197.1	1084.9	1145.2	1369.9 (7)	1400.0 (7)	1372.6 (6)
163.9	168.9	180.3	194.5	246.6 (7)	238.8 (7)	219.3 (6)

---------- Not Available ----------

No. of Facilities in Ontario in 1982 based on Statistics Canada data : N/A
Corrected No. of Facilities used for MBR evaluation (listed on page A-4): 7
No. of Facilities with a direct discharge to a watercourse in 1982 : N/A

Contaminant	No. of Assessable Facilities	FORECAST 1982 COMPLIANCE			PRELIMINARY	
		No. of Facilities which are Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities which are NOT Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Not Forecast	No. of Assessable Facilities	No. of Facilities which were Substantially in Compliance with Environmental Objectives
Particulates	7	7	0	0	7	7
Sulphur Dioxide	7	7	0	0	7	7
Nitrogen Oxides	7	7	0	0	7	7

1982 COMPLIANCE			FORECAST 1983 COMPLIANCE		
No. of Facilities which were NOT Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Unknown	No. of Assessable Facilities	No. of Facilities which are Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities which are NOT Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance is Not Forecast
0	0	6	6	0	0
0	0	6	6	0	0
0	0	6	6	0	0

SECTOR: **NON-FERROUS SMELTING AND REFINING**

S.I.C. No: 295

	1971	1972	1973	1974	1975	1976	1977
No. of Facilities:	9	9	9	9	9	9	9
Capacity:	----------	Not Available	----------				
Production:		Not reported separately from Mine Production (see page)					
Estimated Capital Expenditure for Environmental Protection ($ Millions)	13.3	3.1	37.1	2.1	5.8	3.0	2.4

Notes: No. of Facilities: Figures prior to 1980 from Statistics Canada Catalogue 41-214 (Annual)

Estimated Capital Expenditures: From Applications for Certificates of Approval, Industrial Approvals Estimated Capital Expenditures including Mining expenditures and

EMISSIONS	1971	1972	1973	1974	1975	1976	1977
Air Emissions (Mg/day):							
Particulates			Data Incomplete			51.0	49.8
Sulphur Dioxide			4200			3853	3865
Direct Discharges to Watercourses (Mg/day):							
Heavy Metals	)						
Suspended Solids	)						
Ammonia	)						
Fluorides	)	MBR Data Incomplete					
Radium 226	)						
Uranium	)						

1978	1979	1980	1981	1982	1983
10	11	11	11	10	10
---------- Not Available ----------					
31.8(Air) 10.9(Water)	4.6(Air) 1.2(Water)	5.7(Air) 3.7(Water)	10.6(Air) 57.5(Water	3.1(Air) 28.7(Water) (Prel.)	

Section, Environmental Approvals Branch, Ministry of the Environment.
therefore do not coincide precisely with S.I.C. 295.

1978	1979	1980	1981	1982 Planned	1982 Preliminary Actuals	1983 Proposed
N/A	37.4 (4)	35.7 (6)	36.2 (8)	36.0 (6)	32.0 (8)	<33.3 (8)
1886	1366 (5)	2543 (8)	2503 (8)	2890 (6)	<2447 (8)	2591 (8)
			0.089 (3)	N/A (3)	0.064 (3)	<0.079 (3)
			0.185 (2)	N/A (2)	0.230 (2)	0.185 (2)
			1.4 (1)	N/A (1)	1.20 (1)	1.0 (1)
			0.0 (1)	N/A (1)	N/A (1)	N/A (1)
			N/A (1)	N/A (1)	N/A (1)	N/A (1)
			0.0 (1)	N/A	N/A	N/A

No. of Facilities in Ontario in 1982 based on Statistics Canada data : 11
Corrected No. of Facilities used for MBR evaluation (listed on page A-3): 9
No. of Facilities with a direct discharge to a watercourse in 1982 : 3

Contaminant	No. of Assessable Facilities	FORECAST 1982 COMPLIANCE			No. of Assessable Facilities	PRELIMINARY
		No. of Facilities which are Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities which are NOT Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Not Forecast		No. of Facilities which were Substantially in Compliance with Environmental Objectives
Particulates	9	9	0	0	9	8
Sulphur Dioxide	9	7	1	1	9	7
Heavy Metals	3				3	2
Suspended Solids	3				3	3
Ammonia	1	Data Not Available			2	2
Fluorides	1				1	0
Radium 226	1				1	1
Uranium	1				1	Data Not

1982 COMPLIANCE			FORECAST 1983 COMPLIANCE		
No. of Facilities which were NOT Substantially In Compliance with Environmental Objectives	No. of Facilities where Compliance was Unknown	No. of Assessable Facilities	No. of Facilities which are Expected to be Substantially In Compliance with Environmental Objectives	No. of Facilities which are NOT Expected to be Substantially In Compliance with Environmental Objectives	No. of Facilities where Compliance is Not Forecast
0	1	9	8	0	1
1	1	9	7	0	2
0	1	3	2	0	1
0	0	3	3	0	0
0	0	2	2	0	0
1	0	1	0	1	0
0	0	1	1	0	0
Available		1	Data Not Available		

Abatement Measures for Non-Complying Facilities

- Inco (Port Colborne) will complete a stack testing report to see what measures are required to meet sulphur dioxide objectives
- Eldorado (Port Hope) is expected to be in compliance in the second half of 1983 with fluorides criteria

SECTOR: **FISH PRODUCTS INDUSTRY**

S.I.C. No: 102

	1971	1972	1973	1974	1975	1976	1977
No. of Facilities:		Data Incomplete Prior to 1977					12
Capacity:		---------- Not Available ----------					
Production:							
Value of Shipments ($ Million)	14.8	17.3	20.9	22.7	20.4	24.3	25
Estimated Capital Expenditure for Environmental Protection ($ Millions)		---------- No Figures Available ----------					

Notes: No. of Facilities: Figures prior to 1980 from Statistics Canada Catalogue 32-216.
Production: Figures prior to 1977 from Statistics Canada Catalogue 21-216.

EMISSIONS	1971	1972	1973	1974	1975	1976	1977
Air Emissions (Mg/day):		No Significant Air Emissions					
Direct Discharges to Watercourses (Mg/day):							
Oxygen Demand)		Data Incomplete Prior to 1979					
Suspended Solids)							

1978	1979	1980	1981	1982	1983
16	15	15	15	4	4
	---------- Not Available ----------				
26	27	28	28	N/A	
	Expenditures Are Not Significant				

1978	1979	1980	1981	1982 Planned	1982 Preliminary Actuals	1983 Proposed
	No Signficant Air Emissions					
	<1.0 (2)	<1.0 (3)	<1.0 (3)	<1.0 (3)	0.05 (3)	0.04 (3)
	<1.0 (2)	<1.0 (3)	<1.0 (3)	<1.0 (3)	0.10 (3)	<0.136(3)

No. of Facilities in Ontario in 1982 based on Statistics Canada data : 15
Corrected No. of Facilities used for MBR evaluation (listed on page A-4): 4
No. of Facilities with a direct discharge to a watercourse in 1982 : 4

Contaminant	No. of Assessable Facilities	FORECAST 1982 COMPLIANCE			PRELIMINARY	
		No. of Facilities which are Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities which are NOT Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Not Forecast	No. of Assessable Facilities	No. of Facilities which were Substantially in Compliance with Environmental Objectives
Oxygen Demand	4	3	0	1	4	3
Suspended Solids	4	3	0	1	4	4

1982 COMPLIANCE			FORECAST 1983 COMPLIANCE		
No. of Facilities which were NOT Substantially In Compliance with Environmental Objectives	No. of Facilities where Compliance was Unknown	No. of Assessable Facilities	No. of Facilities which are Expected to be Substantially In Compliance with Environmental Objectives	No. of Facilities which are NOT Expected to be Substantially In Compliance with Environmental Objectives	No. of Facilities where Compliance is Not Forecast
1	0	4	4	0	0
0	0	4	4	0	0

Abatement Measures for Non-Complying Facilities

- No enforcement action is planned to reduce oxygen demand levels at Omstead Foods Ltd. (Wheatley)

SECTOR: **PLASTICS AND SYNTHETIC RESINS**

S.I.C. No: 373

	1971	1972	1973	1974	1975	1976	1977
No. of Facilities:							
Capacity:							
Production:							
Value of Shipments ($ Millions)		No Data Available					
Estimated Capital Expenditure for Environmental Protection ($ Millions)							

Notes: No. of Facilities and Production: Figures prior to 1981 from Statistics Canada Catalogue 46-211 (Annual)

EMISSIONS	1971	1972	1973	1974	1975	1976	1977
Air Emissions (Mg/day):							
Particulates		No Data Available					
Sulphur Dioxide							
Nitrogen Oxides							
Hydrocarbons							
Direct Discharges to Watercourses (Mg/day):							
Suspended Solids		No Data Available					
Phenols							
Phosphorus							
Oxygen Demand							

* Since this sector is included for the first time in this MBR analysis, there is no 1982 planned information.

1978	1979	1980	1981	1982	1983
		33	33	33	
		Data Incomplete			
		617.7	N/A	N/A	

Expenditures included in expenditures for "Petroleum Refining and Petrochemicals" and for "Industrial Chemeicals"

"Manufacturing of Plastics and Synthetic Resins".

1978	1979	1980	1981	1982 * Planned	1982 Preliminary Actuals	1983 Proposed
				N/A	0.41 (3)	0.39 (3)
				N/A	2.30 (4)	2.20 (4)
				N/A	1.34 (4)	1.27 (4)
				N/A	0.10 (2)	0.10 (2)
				N/A	0.108 (3)	<0.110 (3)
				N/A	0.000047(1)	<0.000047 (1)
				N/A	0.001907(2)	<0.0023 (2)
				N/A	0.0087(2)	<0.0189(2)

No. of Facilities in Ontario in 1982 based on Statistics Canada data : 33
Corrected No. of Facilities used for MBR evaluation (listed on page A-4): 10
No. of Facilities with a direct discharge to a watercourse in 1982 : 5

Contaminant	No. of Assessable Facilities	FORECAST 1982 COMPLIANCE *			PRELIMINARY	
		No. of Facilities which are Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities which are NOT Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Not Forecast	No. of Assessable Facilities	No. of Facilities which were Substantially in Compliance with Environmental Objectives
Particulates					3	3
Sulphur Dioxide					4	4
Nitrogen Oxides					5	5
Hydrocarbons					2	2
Suspended Solids		No Information Available			4	2
Phenols					3	0
Phosphorus					2	1
Oxygen Demand					2	2

* Since this sector is included for the first time in this MBR analysis, there is no Forecast 1982 Compliance information.

1982 COMPLIANCE			FORECAST 1983 COMPLIANCE		
No. of Facilities which were NOT Substantially In Compliance with Environmental Objectives	No. of Facilities where Compliance was Unknown	No. of Assessable Facilities	No. of Facilities which are Expected to be Substantially In Compliance with Environmental Objectives	No. of Facilities which are NOT Expected to be Substantially In Compliance with Environmental Objectives	No. of Facilities where Compliance is Not Forecast
0	0	3	3	0	0
0	0	4	4	0	0
0	0	5	5	0	0
0	0	2	2	0	0
0	2	4	2	0	2
1	2	3	0	0	2
1	0	2	1	1	0
0	0	2	2	0	0

Abatement Measures for Non-Complying Facilities

- Oxy-Durez (Fort Erie) will improve control of fugitive emissions of phenols in 1983
- B. F. Goodrich (Niagara Falls) exceedences of phosphorus objectives will be subject to investigation in 1983

SECTOR: **INDUSTRIAL CHEMICALS**

S.I.C. No: 378

	1971	1972	1973	1974	1975	1976	1977
No. of Facilities:		---------- Not Available ----------					
Capacity:		---------- Data Incomplete ----------					
Production: Value of Shipments ($ Millions)		---------- Not Available ----------					
Estimated Capital Expenditure for Environmental Protection ($ Millions)		---------- Not Available ----------					

Notes: No. of Facilities and Production: Figures prior to 1981 from Statistics Canada Catalogue 46-219 (Annual)

Estimated Capital Expenditures: From Applications for Certificates of Approval, Industrial Approvals include all Chemical expenditures and therefore do not coincide

EMISSIONS	1971	1972	1973	1974	1975	1976	1977
Air Emissions (Mg/day):							
Particulates		---------- Not Available ----------					
Sulphur Dioxide		---------- Not Available ----------					
Nitrogen Oxides		---------- Not Available ----------					
Hydrocarbons		---------- Not Available ----------					
Direct Discharges to Watercourses (Mg/day):							
Oxygen Demand		---------- Not Available ----------					
Suspended Solids		---------- Not Available ----------					
Heavy Metals		---------- Not Available ----------					
Phenols		---------- Not Available ----------					
Total Organic Carbon		---------- Not Available ----------					
Ammonia		---------- Not Available ----------					

* Since this sector is included for the first time in this MBR analysis, there is no 1982 planned information.

1978	1979	1980	1981	1982	1983
		72	72	72	72
		---------- Data Incomplete ----------			
		2,619.4	N/A	N/A	N/A
		5.3(Air) 3.4(Water)	6.0(Air) 7.4(Water)	4.8(Air) 0.3(Water) (Prel.)	

"Manufacturing of Industrial Chemicals".

Section, Environmental Approvals Branch, Ministry of the Environment. Estimated Capital Expenditures precisely with S.I.C. 378.

1978	1979	1980	1981	1982 * Planned	1982 Preliminary Actuals	1983 Proposed
				N/A	3.27 (8)	3.11 (8)
				N/A	<25.33 (7)	24.50 (7)
				N/A	27.97 (5)	26.61 (5)
				N/A	2.495 (5)	2.365 (5)
				N/A	<2.347 (4)	<2.373 (4)
				N/A	<13.872 (9)	<13.468 (9)
				N/A	0.003 (1)	<0.01 (1)
				N/A	<0.0142(3)	<0.0070(3)
				N/A	9.712 (3)	4.480 (3)
				N/A	1.588 (1)	1.588 (1)

No. of Facilities in Ontario in 1982 based on Statistics Canada data : 72
Corrected No. of Facilities used for MBR evaluation (listed on page A-5): 33
No. of Facilities with a direct discharge to a watercourse in 1982 : 19

Contaminant	No. of Assessable Facilities	FORECAST 1982 COMPLIANCE *			No. of Assessable Facilities	PRELIMINARY
		No. of Facilities which are Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities which are NOT Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Not Forecast		No. of Facilities which were Substantially in Compliance with Environmental Objectives
Particulates		No Information Available			10	7
Sulphur Dioxide					7	7
Nitrogen Oxides					7	7
Hydrocarbons					5	5
Oxygen Demand					6	4
Suspended Solids					16	8
Heavy Metals					3	3
Phenols					4	1
Total Organic Carbon					3	2
Ammonia					3	1

* Since this sector is included for the first time in this MBR analysis, there is no Forecast 1982 Compliance information.

1982 COMPLIANCE			FORECAST 1983 COMPLIANCE		
No. of Facilities which were NOT Substantially In Compliance with Environmental Objectives	No. of Facilities where Compliance was Unknown	No. of Assessable Facilities	No. of Facilities which are Expected to be Substantially In Compliance with Environmental Objectives	No. of Facilities which are NOT Expected to be Substantially In Compliance with Environmental Objectives	No. of Facilities where Compliance is Not Forecast
0	3	10	7	0	3
0	0	7	7	0	0
0	0	7	7	0	0
0	0	5	5	0	0
2	0	6	4	2	0
5	3	16	9	3	4
0	0	3	3	0	0
2	1	4	2	1	1
1	0	3	3	0	0
2	0	3	1	2	0

Abatement Measures for Non-Complying Facilities

- No abatement plans exist to reduce ammonia at Nitrochem Inc. (Maitland)
- Discharge tests for oxygen demand and ammonia at Chinook Chemicals Corp. (Sarnia) are being reviewed
- Control orders or other abatement programs are in effect for all other facilities in non-compliance with objective criteria

SECTOR: **ABRASIVES**

S.I.C. No: 291

	1971	1972	1973	1974	1975	1976	1977
No. of Facilities:		---------- Not Available ----------					
Capacity:		---------- Data Incomplete ----------					
Production:							
Value of Shipments ($ Million)		---------- Not Available ----------					
Estimated Capital Expenditure for Environmental Protection ($ Millions)		---------- Not Available ----------					

Notes: No. of Facilities: Figures prior to 1981 from Statistics Canada Catalogue 44-202 (Annual)

EMISSIONS	1971	1972	1973	1974	1975	1976	1977
Air Emissions (Mg/day):							
Particulates		---------- Not Available ----------					
Sulphur Dioxide		---------- Not Available ----------					
Hydrogen Sulphide		---------- Not Available ----------					
Direct Discharges to Watercourses (Mg/day):							
Oxygen Demand		---------- Not Available ----------					
Suspended Solids		---------- Not Available ----------					
Phosphorus		---------- Not Available ----------					

* Since this sector is included for the first time in this MBR analysis, there is no 1982 planned information.

1978	1979	1980	1981	1982	1983
		20	20	20	20
		---------- Data Incomplete ----------			
		158.6	N/A	N/A	
		---------- Not Available ----------			

"Abrasives Manufacturing".

1978	1979	1980	1981	1982 * Planned	1982 Preliminary Actuals	1983 Proposed
				N/A	<1.04 (2)	<1.04 (2)
				N/A	<1.0 (1)	<1.0 (1)
				N/A	1.1 (1)	1.1 (1)
				N/A	0.056 (2)	<0.481(2)
				N/A	0.460 (2)	<0.570(2)
				N/A	0.0068(2)	<0.0319(2)

No. of Facilities in Ontario in 1982 based on Statistics Canada data : 20
Corrected No. of Facilities used for MBR evaluation (listed on page A-6): 11
No. of Facilities with a direct discharge to a watercourse in 1982 : 3

Contaminant	No. of Assessable Facilities	FORECAST 1982 COMPLIANCE *			PRELIMINARY	
		No. of Facilities which are Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities which are NOT Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Not Forecast	No. of Assessable Facilities	No. of Facilities which were Substantially in Compliance with Environmental Objectives
Particulates		No Information Available			7	5
Sulphur Dioxide					4	2
Hydrogen Sulphide					3	1
Oxygen Demand					3	2
Suspended Solids					3	1
Phosphorus					3	3

* Since this sector is included for the first time in this MBR analysis, there is no Forecast 1982 Compliance information.

1982 COMPLIANCE			FORECAST 1983 COMPLIANCE		
No. of Facilities which were NOT Substantially In Compliance with Environmental Objectives	No. of Facilities where Compliance was Unknown	No. of Assessable Facilities	No. of Facilities which are Expected to be Substantially In Compliance with Environmental Objectives	No. of Facilities which are NOT Expected to be Substantially In Compliance with Environmental Objectives	No. of Facilities where Compliance is Not Forecast
2	0	7	5	1	1
1	1	4	2	2	0
2	0	3	1	1	1
0	1	3	2	0	1
1	1	3	1	1	1
0	0	3	3	0	0

Abatement Measures for Non-Complying Facilities

- Programs are under negotiation for particulates, sulphur dioxide, and hydrogen sulphide exceedences for Exolon Co. (Thorold) and General Abrasives (Niagara Falls)
- Monitoring is underway for suspended solid exceedences for Norton Abrasives (Niagara Falls)

SECTOR: **METAL STAMPING, PRESSING, AND COATING INDUSTRIES**

S.I.C. No: 3042

	1971	1972	1973	1974	1975	1976	1977
No. of Facilities:	)						
	)						
Capacity:	)						
	)						
Production:	)						
Value of Shipments	)						
($ Millions)	)	No Data Available					
	)						
Estimated Capital	)						
Expenditure for	)						
Environmental Protection	)						
($ Millions)	)						

Notes: No. of Facilities: Figures from Statistics Canada Catalogue 41-227 (Annual).

EMISSIONS	1971	1972	1973	1974	1975	1976	1977
Air Emissions (Mg/day):							
Noise		No Data Available					

1978	1979	1980	1981	1982	1983
		116	116	116	116
		1,740.4			

1978	1979	1980	1981	1982 Planned	1982 Preliminary Actuals	1983 Proposed
				N/A	Not Applicable (106)	Not (106) Applicable

No. of Facilities in Ontario in 1982 based on Statistics Canada data :116
Corrected No. of Facilities used for MBR evaluation (listed on page A-6):106
No. of Facilities with a direct discharge to a watercourse in 1982 :N/A

Contaminant	No. of Assessable Facilities	FORECAST 1982 COMPLIANCE *			No. of Assessable Facilities	PRELIMINARY
		No. of Facilities which are Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities which are NOT Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Not Forecast		No. of Facilities which were Substantially in Compliance with Environmental Objectives
Noise		No Information Available			106	94

* Since this sector is included for the first time in this MBR analysis, there is no Forecast 1982 Compliance information.

1982 COMPLIANCE			FORECAST 1983 COMPLIANCE		
No. of Facilities which were NOT Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Unknown	No. of Assessable Facilities	No. of Facilities which are Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities which are NOT Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance is Not Forecast
0	12	106	94	0	12

Program Outputs

A summary assessment for industrial sector air emissions and water discharges is provided below and on the following pages.

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
(1) Industrial Air Emissions	9 Sectors	9 Sectors	9 Sectors	12 Sectors	12 Sectors
No. of points* assessed as being in compliance with existing objectives	100 (84.0%)	205 (87.6%)	190 (84.1%)	306 (80.1%)	306 (81.2%)
No. of points assessed as not being in compliance with existing objectives, but with abatement plans	9 (7.6%)	12 (5.1%)	9 (4.0%)	11 (2.9%)	11 (2.9%)
No. of points assessed as not being in compliance with existing objectives, without abatement plans	5 (4.2%)	13 (5.6%)	13 (5.8%)	8 (2.1%)	5 (1.3%)
No. of points without assessments	5 (4.2%)	4 (1.7%)	14 (6.2%)	57 (14.9%)	55 (14.6%)
Total:	119	234	226	382	377

* A point is considered as a single parameter at a single location.

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
	9 Sectors	9 Sectors	9 Sectors	12 Sectors	12 Sectors
(2) Direct Industrial Discharges					
No. of points* assessed as being in compliance with existing objectives	113 (51.8%)	174 (73.1%)	175 (78.1%)	212 (67.1%)	228 (74.0%)
No. of points assessed as not being in compliance with existing objectives, but with abatement plans	43 (19.7%)	29 (12.2%)	28 (12.5%)	52 (16.5%)	32 (10.4%)
No. of points assessed as not being in compliance with existing objectives, without abatement plans	12 (5.5%)	23 (9.7%)	6 (2.7%)	21 (6.6%)	9 (2.9%)
No. of points without assessments	50 (23.0%)	12 (5.0%)	15 (6.7%)	31 (9.8%)	39 (12.7%)
Total:	218	238	224	316	308

* A point is considered as a single parameter at a single location.

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
	9 Sectors	9 Sectors	9 Sectors	12 Sectors	12 Sectors
All Industrial Emissions and/or Discharges					
No. of points* assessed as being in compliance with existing objectives	213 (63.2%)	379 (80.3%)	365 (81.1%)	518 (74.2%)	534 (78.0%)
No. of points assessed as not being in compliance with existing objectives, but with abatement plans	52 (15.4%)	41 (8.7%)	37 (8.2%)	63 (9.0%)	43 (6.3%)
No. of points assessed as not being in compliance with existing objectives, without abatement plans	17 (5.1%)	36 (7.6%)	19 (4.2%)	29 (4.2%)	14 (2.0%)
No. of points without assessments	55 (16.3%)	16 (3.4%)	29 (6.5%)	88 (12.6%)	94 (13.7%)
Total:	337	472	450	698	685

* A point is considered as a single parameter at a single location.

Program Effects

On pages 193 to 236 , and 143 to 180 respectively, air quality by geographic location and water quality by watershed information is given. Information from these charts has been extracted to produce the statistics shown below.

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
(1) Industrial Air Emissions:*					
No. of communities with air quality affected by industrial emissions	N/A	65 (94.2%)	N/A	65 (94.2%)	65 (94.2%)
No. of communities with air quality not significantly affected by industrial emissions	N/A	4 (5.8%)	N/A	4 (5.8%)	4 (5.8%)
(2) Direct Industrial Discharges:**					
No. of watersheds affected by direct industrial discharges	N/A	N/A	N/A	48 (33.3%)	46 (31.9%)
No. of watersheds not significantly affected by direct industrial discharges	N/A	N/A	N/A	96 (66.7%)	98 (68.1%)

* Exceedences of air quality standards are given in Table 1 (p. 82). Industrial emissions contribute primarily dustfall, total suspended particulates, sulphur dioxide, total reduced sulphur, soiling index, nitrogen dioxide and hydrocarbons, which lead to the formation of ozone.

** Problems can include low dissolved oxygen, excessive aquatic growth, bacterial contamination, fish kills, toxicity, poor aesthetics, and ecosystem destruction.

The impacts associated with these problems include poor quality of fish, reduced fishing, health risks for contact sports, inability to use the surface water for a drinking water supply, and high water treatment costs.

PROGRAM EFFECTS:

TABLE 1

	1980-81	1981-82	1982-83 PLANNED				1982-83 PRELIMINARY ACTUALS				1983-84 PROJECTED RESULTS			
	% Time Criterion was Exceeded	% Time Criterion was Exceeded	# of Stations expecting no significant change in air quality over 1981	# of Stations expecting improved air quality	# of Stations expecting deteriorated air quality	# of Stations without projections	# of Stations with no significant change in air quality from 1981	# of Stations with improved air quality over 1981	# of Stations with deteriorated air quality over 1981	# of Stations with no data available	# of Stations expecting no significant change in air quality over 1982	# of Stations expecting improved air quality over 1982	# of Stations expecting deteriorated air quality over 1982	# of Stations with no projections
DUSTFALL (monthly criterion)	43.2	33.9	70	1	-	-	47	16	10	-	59	8	6	-
TOTAL SUSPENDED PARTICULATES (24 hr. criterion)	9.1	7.0	95	-	-	39	110	8	13	1	135	-	-	-
SULPHUR DIOXIDE (24 hr. criterion)	0.3	0.3	42	4	-	19	64	3	-	1	49	2	17	-
LEAD IN PARTICULATE MATTER (24 hr.criterion)	0.9	0.6	36	-	-	23	60	-	1	-	61	-	-	-
TOTAL REDUCED SULPHUR (1 hr. criterion)	1.6	2.2	12	-	-	3	11	2	1	1	11	3	2	-
SOILING INDEX (24 hr. criterion)	0.8	1.6	15	-	-	18	23	5	-	1	27	-	2	-
OZONE (1 hr. criterion)	0.5	0.5	15	-	-	14	21	-	-	-	20	-	1	-
CARBON MONOXIDE (8 hr. criterion)	0.0	0.0	9	-	-	12	21	1	-	-	22	-	1	-
NITROGEN DIOXIDE (24 hr. criterion)	0.0	0.0	10	1	-	11	30	2	-	1	33	-	-	-

(3) Communal Sewage Treatment Plant Discharges to Provincial Watercourses (excluding privately operated communal sewage systems)

Program Outputs

A summary assessment for communal sewage treatment plant discharges to provincial watercourses is provided below:

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
Communal Sewage Treatment Plant Discharges:					
No. of points assessed as being in compliance with existing objectives	172 (47.4%)	286 (73.3%)	310 (75.6%)	270 (68.5%)	319 (79.6%)
No. of points assessed as not being in compliance with existing objectives, but with abatement plans	N/A	N/A	N/A	100 (25.4%)	53 (13.2%)
No. of points assessed as not being in compliance with existing objectives, without abatement plans	N/A	N/A	N/A	13 (3.3%)	11 (2.7%)
	149 (41.0%)	79 (20.3%)	62 (15.1%)	113 (28.7%)	64 (15.9%)
No. of points without assessments	42 (11.6%)	25 (6.4%)	38 (9.3%)	11 (2.8%)	18 (4.5%)
Total:	363	390	410	394	401
Population serviced by facilities not meeting effluent requirements				2,700,474	1,410,445

During 1982-83, 113 sewage treatment plants were not in compliance with existing objectives; 50 Municipal plants and 63 Ministry plants have failures which require remedial measures. During 1983-84, it is expected that 64 sewage treatment plants, 23 Municipal and 41 Ministry plants, will have failures requiring remedial measures. A summary of the failures identified and the remedial measures initiated or to be initiated for Ministry and Municipal Sewage Treatment Plants is found on the following two pages.

REMEDIAL MEASURES - MUNICIPAL SEWAGE TREATMENT PLANTS

PRIMARY REASON FOR FAILURE TO MEET OBJECTIVES	1982-83 PRELIMINARY ACTUAL		1983-84 PROPOSED	
	FAILURES IDENTIFIED	REMEDIAL MEASURES	FAILURES IDENTIFIED	REMEDIAL MEASURES UNDERWAY
1. Influent Sewage Characteristics	18	1 marginal failure - continue to maintain and monitor bacteria levels closely 2 under discussion with municipality 2 engineering study phase 1 final design phase 2 funding under review 6 under construction 1 phosphorous removal operation under review 2 no action 1 enforcing by-laws	13	1 funding under review 1 marginal failure - continue to maintain and monitor bacterial levels closely 1 engineering study phase 4 under construction 1 environmental assessment process 1 phasing out existing facilities 1 remedial measures being evaluated 1 no action 1 enforcing by-laws
2. Collecting System Problems	2	1 collection system deficiency under study 1 sewer replacement underway	1	1 sewer repair underway
3. Maintenance and/or Operation	17	1 final design phase 1 operator training is being provided 3 operation and/or maintenance procedures being implemented 5 implementing an operations control program 2 inplant sampling is being modified 1 monitoring procedures and/or equipment being upgraded 2 phosphorous removal operation under review 1 start-up difficulties being remedied 1 conducting treatability study	2	1 under construction 1 operator training is being provided
4. Process and/or Equipment	7	1 construction completed 2 phosphorous removal operation under review 1 process control improvements underway 2 existing equipment/operation is being modified 1 remedial measures being evaluate	2	2 upgrading completed
5. Sludge Removal	1	1 operation and/or maintenance procedures being implemented	0	
6. Other	2	1 under construction 1 construction completed	1	1 under construction
7. Not Related to Plant Performance	3	1 final design phase 1 phosphorous removal operation under review 1 remedial measures being evaluated	4	1 under construction 1 process control improvements underway 2 remedial measures being evaluated
TOTAL	50		23	

REMEDIAL MEASURES - MINISTRY SEWAGE TREATMENT PLANTS

PRIMARY REASON FOR FAILURE TO MEET OBJECTIVES	1982-83 PRELIMINARY ACTUAL		1983-84 PROPOSED	
	FAILURES IDENTIFIED	REMEDIAL MEASURES	FAILURES IDENTIFIED	REMEDIAL MEASURES UNDERWAY
1. Influent Sewage Characteristics	26	1 under discussion with municipality 2 engineering study phase 5 final design phase 3 funding under review 6 under construction 2 environmental assessment process 1 enforcing by-laws 3 start-up difficulties being remedied 2 other 1 funding approval rejected - project halted	18	2 under discussion with municipality 2 engineering study phase 7 under construction 4 construction completed 1 collection system deficiency under study 1 environental assessment process 1 funding approval rejected - project halted
2. Collecting System Problems	6	1 collection system deficiency under study 1 completing the collection system and encouraging connections 3 sewer repairs underway 1 sewer separation underway	5	1 infiltration problems are being corrected 3 sewer repairs underway 1 sewer separation underway
3. Maintenance and/or Operation	6	2 operation and/or maintenance procedures being implemented 2 inplant sampling is being modified 1 assimilation study underway 1 final design phase	3	1 upgrading completed 1 assimilation study underway 1 final design phase
4. Process and/or Equipment	9	1 engineering study phase 1 implementing an operations control program 1 phosphorous removal operation under review 2 new equipment is being installed 2 existing equipment/operation is being modified 1 existing equipment/operation is being repaired 1 process control improvements is underway	4	1 engineering study phase 1 implementing an operations control program 1 remedial measures being evaluated 1 process control improvements underway
5. Sludge Removal	2	2 developing new and/or improved methods of dealing with sludge	0	
6. Other	3	1 start-up difficulties being remedied 1 marginal failure - continue to maintain and monitor level of failed parameter closely 1 no action	0	
7. Not Related to Plant Performance	11	1 operation and/or maintenance procedures being implemented 1 conducting treatability studies 9 no action	11	1 under discussion with municipality 1 remedial measures being evaluated 9 no action
TOTAL	63		41	

Program Effects

On pages 143 to 180, water quality by watershed information is given. Information from these charts has been extracted to produce the statistics shown below.

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
Communal Sewage Treatment Plant Discharges					
No. of watersheds affected by STP discharges*	N/A	N/A	N/A	43 (29.9%)	40 (27.8%)
No. of watersheds not significantly affected by STP discharges	N/A	N/A	N/A	101 (70.1%)	104 (72.2%)

* Problems can include low dissolved oxygen, excessive aquatic growth, bacterial contamination, fish kills, toxicity, poor aesthetics, and ecosystem destruction.

The impacts associated with these problems include poor quality of fish, reduced fishing, health risks for contact sports, inability to use the surface water for a drinking water supply, and high water treatment costs.

EFFICIENCY

Indicators not developed.

RESOURCES

	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
. Expenditures ($000's)	36,498.2	42,046.9	46,915.3	42,304.4
. Person-Years	921.5	930.7	930.7	896.0

MBR PROJECT ON THE MANAGEMENT OF NON-POINT SOURCES AND TRANSBOUNDARY POLLUTION

OBJECTIVE

To prevent adverse effects on human health and well-being and on the natural environment from non-point sources of pollution in Ontario and from transboundary pollution impacting on Ontario.

DESCRIPTION

Non-point sources and transboundary pollution are assigned to a separate MBR project because of the special management problems they pose. Non-point sources are inherently more complex to control than point sources. Regulatory capabilities equivalent to that which the Province has over major point sources are not appropriate either for technical or for socio-economic reasons. In some cases, only demonstration projects are undertaken; for other types of non-point sources, the Ministry has no controls at present. Similarly, Ministry control over transboundary pollution is limited to participation in negotiating and implementing national and international agreements.

Results-oriented indicators are generally limited to descriptive material at this time.

(1) NON-POINT SOURCES OF AIR POLLUTION

1.A Transportation - Vehicle Emissions:

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
Workload					
No. of registered motor vehicles (millions)	5.022	5.051	N/A	5.151	5.250
Magnitude of Emissions					
Emissions of sulphur dioxide, nitrogen oxides, carbon monoxide, hydrocarbons and particulates (Mg/Yr)	4,377,794	4,111,020	N/A	3,923,840	3,924,360

Of the total emissions from all sources in Ontario, transportation sources are responsible for 91% of the carbon monoxide, 62% of the hydrocarbons, and 35% of the nitrogen oxides.

Results

Operational Outputs

The Ministry's Vehicle Emission Control Program consists of: vehicle spotchecks; used car dealership inspections; lectures on emission control legislation at community colleges; assessment of total vehicle mass emissions, muffler shop and gas station inspections; and diesel smoke control resources.

No. of vehicle emissions spotchecks	4,000	4,000	4,000	4,000	4,000
No. of inspections of emission control systems at used car dealerships	2,700	2,700	2,700	2,700	2,700

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
Program Outputs					
Percent of cars violating emission standards (estimates)	45 %	45 %	45 %	45 %	45 %
Percent violations concerning the installation of emission control systems (estimates)	3-4%	3-4%	3-4%	3-4%	3-4%

Program Effects

The Ministry's vehicle emissions program covers only 0.1% of Ontario's vehicle population. As a result, the program neither achieves the decrease in emissions and increase in fuel economy possible from the proper automotive maintenance, nor makes the majority of car owners very conscious of the pollution and energy aspects of automobile emission control maintenance.

On pages 193 to 236, air quality by geographic location information is given. Information from these charts has been extracted to produce the statistics shown below.

No. of communities with air quality affected by vehicle emissions	N/A	30 (43.5%)	N/A	30 (43.5%)	30 (43.5%)
No. of communities with air quality not affected significantly by vehicle emissions	N/A	39 (56.5%)	N/A	39 (56.5%)	39 (56.5%)

Exeedences of air quality standards are given in Table 1, page 82.
Vehicle emissions contribute primarily carbon monoxide, nitrogen dioxide, lead in particulate matter, total suspended particulates, and hydrocarbons which leads to the formation of ozone.

1.B Residential Space Heating:

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
Workload					
Total housing stock (millions of units)	3.091	3.173	N/A	3.233	3.297
Magnitude of Emissions					
Emissions of sulphur dioxide, nitrogen oxides, carbon monoxide, hydrocarbons and particulates (Mg/Yr)	95,670	94,019	N/A	90,057	92,700

Results

Operational Outputs

There are currently no Ministry controls specific to residential space heating; involvement is limited to the investigation of complaints concerning visible emissions from apartment building heating systems.

Program Effects

On pages 193 to 236, air quality by geographic location information is given. Information from these charts has been extracted to produce the statistics shown below.

No. of communities with air quality affected by space heating emissions	N/A	25 (36.2%)	N/A	25 (36.2%)	25 (36.2%)
No. of communities with air quality not significantly affected by space heating emissions	N/A	44 (63.8%)	N/A	44 (63.8%)	44 (63.8%)

In the Table of air quality standard exceedences on page 82, residential space heating emissions contribute primarily sulphur dioxide, nitrogen dioxide, total suspended particulates, carbon monoxide, and hydrocarbons which leads to the formation of ozone.

1.C Urban Activity and Construction:

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
Workload					
		No workload figures have been developed.			
Results					
Operational Outputs					
These sources are uncontrolled. Several demonstration projects are underway to determine the feasibility of reducing urban dust.					
Program Effects					
On pages 193 to 236, air quality by geographic location information is given. Information from these charts has been extracted to produce the statistics shown below.					
No. of communities with air quality affected by urban and construction activity.	N/A	6 (8.7%)	N/A	6 (8.7%)	6 (8.7%)
No. of communities with air quality not significantly affected by urban and construction activity	N/A	63 (91.3%)	N/A	63 (91.3%)	63 (91.3%)

In the Table of air quality exceedences on page 82, urban activity and construction emissions contribute primarily to dustfall, total suspended particulates, and soiling index.

1.D Community Noise

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
Workload					
		All urban municipalities.			
Results					
Operational Outputs					
Municipalities are being encouraged to adopt the Ministry's model municipal noise by-law. In addition, the Ministry receives noise complaints. During 1982, 24% of such complaints were related to industrial noise, 11% were related to air conditioner noise, 8% were related to public nuisance, 6% were related to vehicle noise, 4% were related to vibrations, 3% were related to railway noise, and 44% were related to noises covered under municipal by-laws and other noise types.					
No. of noise complaints	376	305	N/A	244	N/A
Program Outputs					
No. of Municipalities with noise-by-laws	60	76	N/A	95	110
Program Effects					
Noise causes psychological and possibly health related problems, but data is unavailable at this time on any such problems in Ontario.					

(2) NON-POINT SOURCES OF WATER POLLUTION

2.A Urban Runoff and Stormwater Management:

Workload	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
		All urban municipalities.			
Magnitude of Discharges					
Discharges of suspended solids, oxygen demand and total phosphorus (Mg/Yr)	93,470	93,470	N/A	93,470	93,470
% of total discharges resulting from:					
- Combined Sewer Overflows	22.3%	22.3%	N/A	22.3%	22.3%
- Urban Runoff	77.7%	77.7%	N/A	77.7%	77.7%

Results

Operational Outputs — Policies under development

Program Outputs — Not applicable

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
Program Effects					
On pages 143 to 180, water quality by watershed information is given. Information from these charts has been extracted to produce the statistics shown below.					
No. of watersheds affected by urban runoff/stormwater discharges*	N/A	N/A	N/A	24 (16.7%)	22 (15.3%)
No. of watersheds not significantly affected by urban runoff/stormwater discharges	N/A	N/A	N/A	120 (83.3%)	122 (84.7%)

* Problems resulting from urban runoff and combined sewer overflows include:

- flooding, channel erosion, sediment pollution and water quality degredation
- baseflow reduction, particularly in small tributaries, and lowering of the groundwater table
- surface and basement flooding from combined sewer backups
- water quality degredation from combined sewer overflows.

Impacts include:

- poor quality of fish, reduced fishing, health risks for contact sports, inability to use surface water for drinking water supply, and high treatment costs
- costs associated with surface and basement flooding
- inability of vegetation, particularly trees, to survive the lowering of the groundwater table.

2.B Agricultural Runoff:

Workload	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
No. of farms (approx.)	84,900	84,000	N/A	83,100	82,200
Magnitude of Discharges					
Discharges of suspended solids and total phosphorus (Mg/Yr)	1,051,000	1,051,000	N/A	1,051,000	1,051,000

Results

Operational Outputs

In Lake Simcoe, the phosphorous loading from agricultural runoff is being investigated with the aid of monitoring and sampling stations placed at the mouths of the Holland, Black and Beaverton Rivers and Pefferlaw Brook. Subsequent studies will investigate ways and means of reducing phosphorous loadings from agricultural sources. In addition, a public education program will be initiated to increase public awareness of agricultural pollution and ways to mitigate such pollution.

The Thames River Implementation Committee (TRIC, which is ending operations on March 31, 1983), has been operating demonstration sites throughout the Thames River Basin which have demonstrated means of reducing agricultural runoff. Projects have included conservation tillage, grassed waterways, cattle fencing and cleaning out agricultural ditches. Newsletters have also been sent to farmers along the Thames informing them of the needs for conservation.

The Stratford-Avon River Environmental Management Program (SAREMP - which is to be completed by March 31, 1983), also included demonstration projects, including conservation tillage, grassed waterways, and agricultural settling ponds, to demonstrate ways to reduce agricultural runoff.

In the Rondeau Bay, a recent MOE report concluded that the loss of the fishery and aquatic plant growth was due almost entirely to the erosion of agricultural land. A consultants report will be released shortly identifying an erosion control plan for the area. A farming committee and OMAF will be implementing measures from the report and MOE will monitor the water quality of Rondeau Bay.

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
Program Outputs	Not applicable				

Program Effects

As a result of activities and publicity surrounding agricultural runoff pollution problems in Lake Simcoe, the Thames and Stratford-Avon Rivers, and Rondeau Bay, farmers are becoming more aware of the needs to control agricultural runoff and erosion. A slow but gradual improvement may be expected from future voluntary actions taken by farmers to control agricultural runoff.

On pages 193 to 236, air quality by geographic location information is given. Information from these charts has been extracted to produce the statistics shown below.

No. of watersheds affected by agricultural runoff*	N/A	N/A	N/A	33 (22.9%)	33 (22.9%)
No. of watersheds not significantly affected by agricultural runoff	N/A	N/A	N/A	111 (77.1%)	111 (77.1%)

* Problems can include low dissolved oxygen, excessive aquatic growth, bacterial contamination, fish kills, toxicity, poor aesthetics, and ecosystem destruction.

The impacts associated with these problems include poor quality of fish, reduced fishing, health risks for contact sports, inability to use the surface water for a drinking water supply, and high water treatment costs.

(3) TRANSBOUNDARY AIR POLLUTION AND ATMOSPHERIC DEPOSITION

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
Workload					

- Sources external to Ontario, primarily in the Eastern United States and in the Provinces of Manitoba and Quebec.
- Major sources of air emissions in Ontario.

Significant Problem Areas

Emissions from thermal power generating stations, refineries, non-ferrous smelters and vehicles have impacts on Ontario airsheds and watersheds.

Results

Operational Outputs

International Legal Initiatives: On October 7, 1981, Ontario intervened before the Indiana Air Pollution Control Board opposing increases in limits on sulphur dioxide emissions requested by the Clifty Creek Generating Station in Jefferson County, Indiana.

On June 30, 1982, Ontario intervened before the Michigan Air Pollution Control Commission hearing concerning the Detroit Edison application for an extension of the date to comply with the Michigan "1% or equivalent sulphur in fuel rule" from 1985 to 1990 for its Monroe Plant.

On February 2, 1983, Ontario intervened before the Indiana Air Pollution Control Board opposing increases in limits on sulphur dioxide emissions requested by the Petersburg Generating Station.

During 1983-84, Ontario may initiate a legal suit under section 115 of the U.S. Clean Air Act against the United States EPA. (Section 115 of the U.S. Clean Air Act forces the EPA Administrator to take into account the impact of any increased emissions which may endanger public health or welfare in a foreign country.)

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
Provincial Initiatives: Through the Acidic Precipitation in Ontario Study (APIOS), a wide range of activities that were commenced during 1981-82 or earlier are continuing in 1983-84. Throughout 1983-84, research and initiatives will continue on: Atmospheric Processes Studies; Aquatic Effects Studies; Terrestrial Effects Studies; Socio- Economic Investigations; Legal Initiatives; and Public Relations Initiatives. All of this work is to assist in the development of abatement strategies for Ontario.					
No. of negotiations and interventions dealing with transboundary air pollution	0	1	N/A	2	1
Program development for Ontario			Impact studies and abatement strategies to be developed	Impact studies and abatement strategy studies continuing	Impact studies and abatement strategy studies continuing

Program Outputs	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed

International Initiatives: Ontario's intervention before the Michigan Air Pollution Control Commission beneficially assisted the decision to force Detroit Edison's Monroe Plant to comply with the "1% or equivalent sulphur in fuel rule" by 1985, rather than extend it to 1990, as had been requested by the company. Despite Ontario's opposition, the Indiana Air Pollution Control Board permitted an increase of sulphur dioxide emissions by the Clifty Creek Plant. No information is available at this time with respect to the effect of Ontario's intervention regarding the Petersburg Generating Station.

Provincial Initiatives: On September 2, 1980, the Ministry of the Environment issued a regulation to Inco Ltd. in Sudbury limiting its SO_2 emissions from the Copper Cliff smelter complex to 2,500 tons per day and from its Iron Ore Recovery Plant to 250 tons per day (these are considered to be two single sources). In addition, the regulation stipulated a reduction to 1,950 tons of SO_2 per day by December 31, 1982 for the Copper Cliff smelter complex.

On February 17, 1981, the Ministry of the Environment issued a regulation to Ontario Hydro regulating the sulphur dioxide and nitrogen oxide emissions from all of Hydro's thermal power generating stations (therefore, considered to be a class of sources). A revised regulation was issued on January 30, 1982 which restricts SO_2 emissions to 390,000 metric tonnes per year and combined SO_2 and NO_x emissions to 450,000 metric tonnes per year by January 1, 1986, and further restricts SO_2 emissions to 260,000 metric tonnes per year and combined SO_2 and NO_x emissions to 300,000 metric tonnes per year by January 1, 1990.

Between 1981 and 1983, other Ontario sources of acid gas emissions have been studied. On December 21, 1982 the Ontario/Canada Task Force on Inco Limited and Falconbridge Limited released its report which evaluated the technology and economics of future abatement options for these two firms. The future issuance of regulations or control orders to reduce acid gas emissions from Ontario sources will be dependant on negotiations with the Federal governments in Canada and the U.S. in the development of national and North American acid gas abatement strategies.

No. of emission increases disallowed or allowable emissions reduced concerning non-Ontario sources:					
- single source	0	0	N/A	1	N/A
- class	0	0	N/A	0	N/A

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
No. of emission increases disallowed or allowable emissions reduced concerning Ontario sources:					
- single source	2	0	N/A	0	Dependent on negotiations with the Federal and U.S. governments
- class	1	0	N/A	0	

Program Effects

On pages 143 to 180, and 193 to 236 respectively, water quality by watershed and air quality by geographic location information is given. Information from these charts has been extracted to produce the statistics shown below. Where air quality is affected by long range transport, air emission sources resulting in the long range transport of air pollutants may be from Ontario or external to Ontario. Similarily, both Ontario and non-Ontario emission sources contribute to the atmospheric deposition affecting Ontario watersheds.

No. of communities with air quality affected by long range transport	N/A	29 (42.0%)	N/A	29 (42.0%)	29 (42.0%)
No. of communities with air quality not significantly affected by long range transport	N/A	40 (58.0%)	N/A	40 (58.0%)	40 (58.0%)
No. of watersheds affected by atmospheric deposition*	N/A	N/A	N/A	15 (10.4%)	15 (10.4%)
No. of watersheds not affected significantly by atmospheric deposition	N/A	N/A	N/A	129 (89.6%)	129 (89.6%)

* Problems can include low pH, low alkalinity, toxicity, and ecosystem destruction. The impacts associated with these problems can include poor quality of fish, reduced fishing, inability to use the surface water for drinking water supply, and high water treatment costs.

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
The APIOS has also done extensive lake sampling to assess the current biological (specifically fisheries) and chemical (specifically pH and alkalinity) state of provincial waters which are being affected by long range transport and atmospheric deposition. The results of these surveys are identified below.					
Total number of lakes surveyed	N/A	1,665	N/A	2,619	3,100
No. of lakes found to be acidified	N/A	86 (5.2%)	N/A	118 (4.5%)	N/A
No. of lakes found to be extremely sensitive	N/A	234 (14.0%)	N/A	331 (12.6%)	N/A
No. of lakes found to be moderately sensitive	N/A	567 (34.0%)	N/A	929 (35.5%)	N/A
No. of lakes found to be of low sensitivity	N/A	244 (14.7%)	N/A	430 (16.4%)	N/A
No. of lakes found to be not sensitive	N/A	534 (32.1%)	N/A	811 (31.0%)	N/A

(4) TRANSBOUNDARY WATER POLLUTION

Workload	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed

All non-Ontario water polluting sources on shared watersheds.

Significant Problem Areas

- Sources in Messena, N.Y. have contributed to PCB contamination of the St. Lawrence River.
- Raw sewage discharges from Quebec affect the lower Ottawa River.
- Discharges from pulp and paper companies in Quebec affect the Ottawa River - Holden Lake area.
- A large number of industrial and municipal discharges on the U.S. side of the Niagara River contribute to trace contamination, heavy metals, phosphorus and bacteria loadings. At least 4 of the 215 disposal sites on the U.S. side of the river are known to have leaked contaminants into the river (Love Canal, Hyde Park, 102nd St., Hooker "S" area).
- U.S. sources in Michigan contribute trace contaminants, heavy metals, phosphorus and bacterial loadings to the Detroit River.
- Gold mines in Quebec have contributed heavy metals to the Upper Abitibi River.

Results

Operational Outputs

1982-83 - Niagara River Improvement Team: Twelve State Pollution Discharge Elimination System (SPDES) permits for municipal and industrial discharges from the U.S. side of the Niagara River were reviewed and comments forwarded to the N.Y. Department of Environmental Conservation (DEC) in 1982. This included a thorough review of the Niagara Falls, N.Y., Wastewater Treatment Plant (WWTP). At Hooker's Hyde Park disposal site, the team monitored the progress of remedial work conducted under the terms of the settlement agreement reached between Hooker Chemicals and Plastic Corporation Inc., U.S. EPA and NYDEC. A hydrogeological evaluation of Hooker's "S-Area" site was conducted and

1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed

Ontario announced its intention on September 27, 1982 to seek intervenor status in litigation proceedings against Hooker. A hydrogeological evaluation of Hooker's Love Canal site was prepared and the Ministry's position is presently being formulated. The team has also been investigating thirty-four Ontario sources or potential sources discharging to the Niagara River or its tributaries.

1982-83 - Other Transboundary Water Pollution Activities:

An international agreement has been formulated dealing with specific plans for phosphorus control, from both point and non-point sources, to the Lower Great Lakes. (This is the Phosphorus Supplement to Annex 3 of the 1978 Great Lakes Water Quality Agreement.) The Ministry has also been updating a list of hazardous contaminants originating from Ontario sources for Annex 10 of the 1978 Great Lakes Water Quality Agreement. In October 1982, a joint Federal/ Provincial report dealing with transboundary water pollution problems in the Ottawa River was released.

1983-84 - Niagara River Improvement Team: Thirteen SPDES permits for major U.S. discharges (including Hooker Chemicals, Bethlehem Steel, and the Buffalo WWTP) are to be reviewed during 1983. The Hyde Park dump remedial work will be monitored. Regarding Hooker's "S-Area" disposal site, litigation proceedings will be monitored and MOE's views and interests will be addressed through intervention or negotiation. Remedial work conducted at the Love Canal will be monitored during 1983 and MOE's views will be expressed to U.S. authorities by means yet to be determined. A hydrogeological evaluation of the 102nd Street Site will be commissioned and subsequent action will be taken by means of intervention or negotiation. Recommendations will also be made regarding any action Ontario should take concerning Hooker Durez and the Lake Ontario Ordinance Works in Lewiston, N.Y. Continued monitoring of Ontario sources will continue.

1983-84 - Other Transboundary Water Pollution Activities:

It is expected that the Phosphorus Supplement to Annex 3 of the 1978 Great Lakes Water Quality Agreement will be signed. It is also expected that the Federal Government will influence the Province of Quebec to clean up Quebec sources of water pollution to the Ottawa River.

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed

Program Outputs

The Niagara Falls, N.Y. WWTP SPDES permit was amended to meet a number of Ontario's concerns as a result of intervention by the Niagara River Improvement Team.

Program Effects

As a result of work conducted by the Niagara River Improvement Team, tangible changes in international negotiation procedures, information flow and knowledge of the extent and sources of contamination, together with specific improvements to discharge permits and litigation documents have occurred. There is also an increased awareness in the U.S., at both federal and state levels, that Ontario has real concerns about the quality of the Niagara River and is determined to protect its environmental interests.

On pages 143 to 180, water quality by watershed information is given. Information from these charts has been extracted to produce the statistics shown below.

No. of watersheds with specific non-Ontario sources causing transboundary water pollution*	N/A	N/A	N/A	6 (4.2%)	6 (4.2%)
No. of watersheds with no significant water quality problems caused by non-Ontario sources	N/A	N/A	N/A	138 (95.8%)	138 (95.8%)

* Problems include low dissolved oxygen, excessive aquatic growth, bacterial contamination, fish kills, toxicity, poor aesthetics, and ecosystem destruction.

The impacts associated with these problems include poor quality of fish, reduced fishing, health risks for contact sports, inability to use the surface water for a drinking water supply, and high water treatment costs.

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
EFFICIENCY Indicators not developed.					
RESOURCES					
. Expenditures ($000's)		9,155.5	11,832.0	10,688.0	11,626.9
. Person-Years		92.5	91.5	94.0	98.0
. Revenue ($000's)		231.5	219.0	219.0	199.0

MBR PROJECT ON WASTE DISPOSAL

OBJECTIVE

To ensure that private, municipal and industrial systems for disposing of all wastes not emitted to air or discharged to water are developed and operated so as to confine their detrimental effects.

DESCRIPTION

The resources assigned to this MBR project include:

- the person-years and budget of the Waste Management Branch relating to the waybill system, and waste management policy development and planning,
- the Hearing Panel on Industrial Waste Management,
- the person-years and budget of the Regions relating to the inspection and regulation of waste disposal sites and systems, and the regulation of private sewage systems,
- transfer payments to municipalities and health units for the regulation of private sewage system installations,
- the person years and budget of Water Resources Branch relating to hydrogeological studies of waste sites, and
- the person years and budget of the Environmental Approvals and Project Engineering Branch relating to site and system approvals.

WORKLOAD

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
No. of generators of hauled liquid industrial wastes	N/A	1,100	N/A	1,100	1,600*
No. of identified liquid industrial waste haulers	N/A	291	N/A	291	291
No. of liquid industrial waste treatment/disposal sites or facilities	N/A	94	N/A	76	77
No. of active municipal landfill sites	767	767	767	761	760
No. of other active landfill sites** (approx.)	609	609	609	609	609
No. of certified sludge utilization sites	Data to be provided in future reports.				
No. of private sewage systems (estimated)	750,000	760,000	770,000	765,000	770,000
No. of sewage plants with sludge utilization	N/A	151	N/A	132	128

* Generators of hauled solid hazardous industrial wastes are expected to come under the provisions of the waybill system during 1983-84

** See Section (2) of RESULTS for a definition of these sites.

RESULTS

The Results section of this MBR Project includes a component on each of the following major types of waste:

(1) hauled liquid industrial waste
(2) municipal waste
(3) sewage sludges
(4) sewage with sub-surface disposal.

(1a) Hauled Liquid Industrial Waste Management (MOE)

Operational Outputs

Hauled liquid industrial wastes are those wastes generated by manufacturing or processing operations which are hauled away from the place where they are generated to another location, either off-site or on-site, for treatment and/or disposal. The MOE's Waybill Monitoring Program monitors the transfers of liquid industrial waste from the point of generation to the point of final disposition.

The disposition of hauled liquid industrial wastes as documented by the waybill system is presented below:

	1980-81		1981-82		1982-83 Preliminary Actuals		1983-84 Proposed	
	Volume (000's Litres)	No. of Sites	Volume (000's Litres)	No.** of Sites	Volume (000's Litres)	No.** of Sites	Volume (000's Litres)	No.** of Sites
Incineration	72,282 (29.7%)	N/A	64,940 (26.3%)	2	53,643 (22.7%)	2	58,189 (23.6%)	2
Direct Landfill	105,467 (43.4%)	N/A	72,203 (29.2%)	13	54,097 (22.8%)	11	49,552 (20.1%)	9
Sewage Treatment Plants	*	N/A	12,608 (5.1%)	21	10,910 (4.6%)	16	10,001 (4.0%)	18
Reclamation and Re-use	*	N/A	33,810 (13.7%)	20	33,196 (14.0%)	9	35,913 (14.5%)	10
Export	15,456 (6.3%)	N/A	22,982 (9.3%)	20	35,459 (15.0%)	21	40,459 (16.4%)	21
Miscellaneous	*	N/A	7,966 (3.2%)	N/A	11,819 (5.0%)	N/A	11,365 (4.6%)	N/A
Received at Transfer Stations	*	N/A	32,500 (13.2%)	18	37,732 (15.9%)	17	41,369 (16.8%)	17
TOTAL	243,211	N/A	247,009	94	236,856	76	246,848	77

* 1980-81 data is not compatible with other years shown. A total of 50,006,000 litres (20.6% of the total for 1980-81) was chemically treated, according to records from the Waste Management Branch, but the specific breakdown of such treatment is not available.

** An inventory of liquid industrial waste sites, facilities, treatment centres or plants is found in Appendix B.

A refined breakdown outlining the quantities and types of waste by their final disposition is presented below for the 1981-82 fiscal year.

DISPOSITION OF LIQUID INDUSTRIAL WASTES HAULED IN ONTARIO, APRIL 1, 1981 - MARCH 31, 1982

	Direct Landfill	Incineration	Export	Received at Transfer Stations	Reclamation and Re-use	Sewage Treatment Plants	Miscellaneous*	Total
				(Thousands of Litres)				
INORGANICS								
Acids Alkalis	4,830.2	2,181.3	8,931.5	2,171.3	4,355.2	1,061.0	4,429.8	27,960.3
Metal Finishing Wastes Cyanides Chemical Fertilizers Phosphates Other Inorganics	9,765.5	7,592.8	5,872.6	1,942.4	149.1	1,408.8	760.6	27,491.8
Total Inorganics	14,595.7	9,774.1	14,804.1	4,113.6	4,504.3	2,469.8	5,190.5	55,452.1
ORGANICS								
Oily Water Waste Oils	9,902.9	24,940.0	4,448.9	10,854.1	20,993.0	592.8	1,653.5	73,385.3
Organic Solvents Chlorinated Solvents Plastic Resins Amines Glycols Phenols P.C.B's	5,073.6	19,113.0	2,380.1	11,298.1	801.9	0.0	359.0	39,025.7
Plant & Animal Wastes Other Organics	6,698.6	9,220.1	40.5	1,621.1	7,403.4	8,559.3	437.8	33,980.8
Total Organics	21,675.2	53,273.2	6,869.5	23,773.3	29,198.3	9,152.1	2,450.3	146,391.8
MISCELLANEOUS								
Pigments, Paint, Printing & Adhesives Pesticides Detergents, Cleaners, Soap Pharmaceuticals & Cosmetics Inert Sludges	35,931.6	1,893.0	1,308.3	4,613.1	107.9	985.8	325.2	45,165.0
Total Inorganics	35,931.6	1,893.0	1,308.3	4,613.1	107.9	985.8	325.2	45,165.0
GRAND TOTAL	72,202.6	64,940.2	22,982.0	32,500.0	33,810.4	12,607.6	7,966.0	247,008.8

* Includes wastes spread on farmland as soil conditioner, wastes used on roads as a dust suppressant and other uses.

** Original data converted from imperial gallons to litres.

The Ministry is also in the midst of a thorough and comprehensive review of all present waste management practices, policies and controls, including legislation, to provide improved protection to the environment and to the public. In mid-1983 a "Blueprint for Waste Managment" is scheduled for completion. Following public review and consultation of the "Blueprint", necessary legislation, policies and programs establishing a comprehensive system of waste management will be introduced in early 1984. The "Blueprint" will address of number of key areas with respect to liquid industrial waste management. A controlled wastes (i.e. non-hazardous soild and liquid wastes requiring site-specific disposal) and special wastes (i.e. hazardous wastes and hauled liquid industrial wastes) classification system will be developed. The waybill system will be further refined. Proposals on the perpetual care of active and inactive waste sites will be proposed.

Program Effects:

Regular monitoring by regional abatement staff has found that landfill sites, incinerators, and other treatment/disposal facilities are operating in accordance with present legislation. Improved monitoring, operation, and long-term management of eight landfill sites (seven municipal sites and Tricil) accepting liquid wastes is expected as a direct result of the issuance of E.P.A. Regulation 808/81.

(1) Hauled Liquid Industrial Waste Management (OWMC)

Operational Outputs

1980-81

In November 1980, a government-owned parcel of land in South Cayuga was chosen as the site for a provincial comprehensive liquid industrial waste management facility. The Ontario Waste Management Corporation was formed shortly thereafter to research, develop, establish, operate and maintain facilities for the transmission, reception, collection, examination, storage, treatment and disposal of liquid industrial wastes, and most specifically, to establish the above noted facility at South Cayuga.

1981-82

Following an intensive hydrogeological evaluation of the South Cayuga site, the OWMC rejected the site as a suitable location for the establishment of a liquid industrial waste management facility. The Corporation continued to investigate the technical requirements of and possible locations for a liquid industrial waste management facility.

1982-83 Plans

The Ontario Waste Management Corporation will continue to investigate the technical requirements of and proposed locations for a liquid industrial waste treatment facility.

1982-83 Preliminary Actuals

The Ontario Waste Management Corporation has isolated the Golden Horseshoe as the preferred geographic region for a centralized or decentralized liquid industrial waste treatment facility. The Corporation will refine its investigation of the technical requirements for the facility as well as identifying candidate sites within the Golden Horseshoe area.

1983-84 Proposed Results

The Ontario Waste Management Corporation will select and fully evaluate in detail the specific candidate site(s), decide on the preferred combination of components and size, and develop conceptual designs of facility components for a liquid industrial waste treatment facility. The OWMC expects to announce one to three specific sites for further study by the end of April, 1983, and expects to have a firm proposal ready to go to the Hearing Panel on Industrial Waste Management by December, 1983.

Program Effects

Throughout its deliberations since the rejection of the South Cayuga site, the OWMC has relied extensively on public consultation meetings with the interested public, municipalities and industry. These public consultation programs have served to educate these groups and the public at large of the need for the environmentally safe management of liquid industrial wastes and should diffuse the typical "not-in-my-backyard-syndrome" which has undermined past efforts to establish appropriate liquid industrial waste management facilities in this Province.

(2) Municipal Waste Disposal Site Operations:

Only active landfill sites which are owned and operated by municipalities are evaluated here. An additional estimated 609 sites which are subject to Ministry regulation are not evaluated. These are owned and operated either by the Ministry of Natural Resources, by corporations for their own use, or by waste disposal firms.

Operations Outputs

The Ministry is developing a "Blueprint for Waste Management" scheduled for completion in mid-1983, and necessary legislation, policies and programs establishing a comprehensive system of waste management will be introduced in early 1984. The "Blueprint" will address a number of key areas with respect to the management of municipal wastes. Long-term planning for waste management, co-ordinated with other land-use planning, and providing for adequate recycling, treatment, and disposal facilities will be developed. Measures will be developed to minimize the need for landfill disposal by promoting means to reduce the quantity of wastes produced and to recover and re-use waste materials. Proposals on the perpetual care of active and inactive waste sites will also be proposed.

The Ministry is also conducting a major regional inventory and status report of all active landfill sites in the province.

Program Outputs

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
No. of sites developed and operated satisfactorily	464 (60.5%)	546 (71.2%)	630 (82.1%)	580 (76.2%)	622 (81.8%)
No. of sites with no assessment	N/A	41 (5.3%)	10 (1.3%)	39 (5.1%)	24 (3.2%)
No. of sites with groundwater, surface water, gas control or site management problems	303 (39.5%)	180 (23.5%)	127 (16.6%)	142 (18.7%)	114 (15.0%)
Total number of sites:	767	767	767	761	760

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
No. of sites accounted for with problems	303	180	N/A	142	144
No. of satisfactory sites evaluated		546	N/A	580	622
No. of MNR sites and other sites	1,195	609	609	609	609
No. of sites with no assessment		41	N/A	39	24
Total number of sites:	1,498	1,376	N/A	1,370	1,369

The chart below identifies numbers of sites with specific problems - groundwater, surface water, gas control and site management problems - and the effectiveness of remedial measures which have been taken to alleviate such problems.

No. of sites with:	1980-81	1981-82	1982-83 Preliminary Corrections Completed	1982-83 Preliminary Actuals	1983-84 Proposed Corrections Planned	1983-84 Proposed
- Groundwater pollution problems	21	17	(3)*	20	(3)*	23
- Surface water pollution problems	44	29	7	22	1	21
- Gas control problems	7	9	6	3	0	3
- Other problems related to site management	231	125	28	97	23	67
Total	303	180	38	142	21	114

* Bracketed numbers indicates that new problems at sites are anticipated.

Program Effects

To a large degree the operations of municipal waste disposal sites are satisfactory. Ministry funding has helped to alleviate problems at municipal waste disposal sites, specifically site management problems. However, the number of sites with groundwater pollution problems has increased in the past fiscal year and is expected to increase further in the next fiscal year. Improper disposal practices and operations in the past, along with the Ministry's lack of knowledge regarding the types and quantities of waste disposed of at municipal sites in the past, may lead to the increased incidence of further groundwater contamination problems in the future.

(3) Sewage Sludges:

Operational Outputs

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
Sludges generated (10^3 m^3/yr)	N/A	N/A	N/A	4,513	4,558
No. of Sewage treatment plants generating sludge	N/A	N/A	N/A	238	238
Percent of sludges generated:					
- utilized on agricultural land	N/A	N/A	N/A	33.8%	29.4%
- incinerated	N/A	N/A	N/A	33.4%	34.5%
- landfilled	N/A	N/A	N/A	25.7%	29.0%
- placed in drying beds	N/A	N/A	N/A	2.8%	2.8%
- composted	N/A	N/A	N/A	2.5%	2.5%
- used in mine tailings rehabilitation	N/A	N/A	N/A	1.8%	1.8%
Volume of sludges utilized on agricultural land (10^3 m^3/yr)	N/A	N/A	N/A	1,524	1,338

Program Outputs

Percentage of plants practicing sludge utilization with acceptable or marginal sludge quality	N/A	84.8%	N/A	84.8%	100%
Percentage of plants practicing sludge utilization with unacceptable sludge quality	N/A	15.2%	N/A	15.2%	0%

Program Effects

Sludge utilization sites with elevated levels of heavy metals in soil	There is no evidence of any sludge utilization sites with problems.

(4) Private Sewage Systems:

Operational Outputs

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
Waste flows (10^3 m^3/yr)	400	400	400	400	400

Program Outputs

No. of new systems approved as being installed in accordance with guidelines	14,606	13,593	14,000	13,000	14,000

Program Effects

On pages 143 to 180, water quality by watershed information is given. Information from these charts has been extracted to produce the statistics shown below.

No. of watersheds with surface water quality problems associated with the use of private sewage systems	N/A	N/A	N/A	8 (5.6%)	8 (5.6%)
No. of watersheds with no identified impact from private sewage systems	N/A	N/A	N/A	136 (94.4%)	136 (94.4%)

EFFICIENCY

(1) Hauled Liquid Industrial Wastes:

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
No. of matched waybill receipts	21,887 (91.8%)	23,986 (93.2%)	N/A	22,500 (97.8%)	32,175 (99.0%)
No. of unmatched waybill receipts	1,949 (8.2%)	1,760 (6.8%)	N/A	500 (2.2%)	325 (1.0%)
Total number of waybill receipts	23,836	25,746	N/A	23,000	32,500

(2) Other meaningful data is not available for this Report

RESOURCES

	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
. Expenditures ($000's)	9,182.7	14,407.0	13,629.0	12,844.5
. Person-Years	83.0	83.0	84.0	83.0
. Revenue ($000's)	149.4	160.0	160.0	153.0

MBR PROJECT ON RESOURCE RECOVERY AND SOURCE SEPARATION

OBJECTIVES

To assist municipalities, private industry or non-profit organizations in establishing source separation projects in order to assess their social and economic viability.

To operate the Experimental Resource Recovery Plant (ERRP) in order to develop, demonstrate and assess the technology and economic viability of resource recovery.

DESCRIPTION

The resources assigned to this MBR project include:

- the person-years and budget of the Waste Management Branch relating to the operation of the Experimental Resource Recovery Plant,
- transfer payments for establishment and initial operation of source separation projects, and
- the Waste Management Advisory Board.

WORKLOAD

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
Quantity of municipal waste* generated (10^3 Mg/Yr)	6,228	6,265	N/A	6,301	6,337

* Municipal waste is defined as residential, commercial, institutional, and non-hazardous solid industrial waste. This is an estimate based on average generation figures developed by the Waste Management Advisory Board and Ontario population statistics.

RESULTS

Operational Outputs

The Ministry is actively marketing recovered products from the Experimental Resource Recovery Plant. During 1982-83, 15 different market development projects were underway. These include: compost use in nursery operations, land reclamation and park improvements; ferrous metal sales to two steel companies; corrugated paper sales on the spot market; glass utilization in building products; and the utilization of refuse derived fuel (RDF) for its fibre component and for its fuel value. An additional project during 1983-84 will employ compost in turf growing for golf courses.

In August 1980, the Ministry announced its policy concerning source separation and in August 1981, the Ministry's six-point program regarding financial incentives and other assistance to be made available to municipalities, private industry or other organizations for source separation projects was enunciated. During 1982-83, eight different source separation projects were financially aided by the Ministry's program. In Halton and Stratford, private companies operated projects; in Niagara, Richmond Hill, Durham and East York, non-profit organizations ran source separation projects; in Kanata and in the Metro Toronto area, two private companies operated projects collecting high grade paper from offices.

The Ministry is also in the midst of a thorough and comprehensive review of all present waste management practices, polices and controls, including legislation, to provide improved protection to the environment and to the public. In mid-1983 a "Blueprint for Waste Management" is scheduled for completion. Following public review and consultation of the "Blueprint", necessary legislation, policies and programs establishing a comprehensive system of waste management will be introduced in early 1984. The "Blueprint" will address ways to minimize the need for landfill disposal by promoting measures to reduce the quantity of waste produced and to recover and re-use waste materials.

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
No. of market development projects underway at ERRP	7	7	7	15	16
No. of source separation projects underway	0	1	10	8	12
Program Outputs					
(1) Source Separation Projects					
Total Waste Generated in Communities/ Offices with Source Separation Projects (10^3 Mg/Yr)	N/A	N/A	N/A	421.57	506.0
Recovered Products (10^3 Mg/Yr)					
- Newspaper	N/A	N/A	N/A	6.799 (17.9%)*	8.160
- Corrugated Paper	N/A	N/A	N/A	0.123 (0.3%)*	0.150
- High Grade Paper	N/A	N/A	N/A	1.665 (4.9%)*	2.000
- Glass	N/A	N/A	N/A	0.121 (0.4%)*	0.145
- Metal	N/A	N/A	N/A	0.015 (0.1%)*	0.018
Total Recovered Products	N/A	N/A	N/A	8.723	10.473
Total Recovered Products as a % of Total Waste Generated	N/A	N/A	N/A	2.07%	2.07%

* Figures shown are the percentage of recovered product from the total quantity of product available.

(2) Operation of the Experimental Resource Recovery Plant

	1980-81		1981-82		1982-83 Planned		1982-83 Preliminary Actual		1983-84 Proposed	
	$000's	Tonnes (000's)	$000's	Tonnes (000's)	$000's	Tonnes (000's)	$000's	Tonnes (000's)	$000's	Tonnes (000's)
Waste Receipts	643.6	63.8	1,110.2	87.9	2,061.4	120.0	1,740.0	150.0	2,040.0	160.0
Recovered Products										
- Refuse Derived Fuel	-	0.700	-	0.047	-	*	-	0.037	-	0.100*
- Ferrous	31.0	0.700	66.7	1.583	84.0	2.400	58.0	1.700	88.0	2.200
- Corrugated Paper	63.0	0.702	128.7	1.687	120.0	2.400	80.0	1.450	120.0	2.000
- Compost	-	0.250	7.05	0.639	32.0	3.200	10.0	1.900	30.0	3.000
- Baled Waste Newspaper	81.0	0.820	20.8	1.977	25.2	2.520	12.7	1.200**	-	2.000**
Totals for Recovered Products	$175.0	3.172	$223.25	5.933	$261.2	1.052	$160.7	6.287	$238.0	9.300
Total Recovered Products as a % of Waste Receipts		4.97%		6.75%		8.77%		4.19%		5.81%

* Contingent on negotiations with private sector.

** Receipt of waste newspaper discontinued in November 1982; may not resume in 1983-84.

Program Effects

Quantitative indicators have not been developed. However, the types of consequences include:

- less waste directed to landfill sites, and a reduced need for landfilling
- savings in energy and in the use of raw materials, and
- new job opportunities in processing recovered materials.

EFFICIENCY

Operational Efficiency:

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
% of Continuously Attainable ERRP Process Availability Achieved	39	58	75	73	75

RESOURCES

. Expenditures ($000's)	3,905.0	5,687.0	5,747.0	5,790.0
. Person-Years	16.0	16.0	16.0	16.0
. Revenue ($000's)	1,090.4	2,300.0	1,700.0	2,300.0

MBR PROJECT ON PESTICIDES CONTROL

OBJECTIVE

To control the distribution, sale, storage and use of pesticides through the regulation and education of the pesticides industry, applicators, farmers, municipalities, and the public in order to protect the natural environment and human health while allowing the beneficial uses of pesticides.

DESCRIPTION

The resources assigned to this MBR project include:

- the person-years and budget of the Hazardous Contaminants and Standards Branch relating to pesticides regulatory and educational activities,
- the Pesticides Advisory Committee,
- the person-years and budget of Regional pesticides control staff,
- the person-years and budget of the Laboratory Services and Applied Research Branch relating to pesticides testing and analysis, and
- transfer payments for termite control and the budget for termite surveys.

WORKLOAD

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
Classified pesticides (approx.)	4,200	4,200	N/A	4,200	4,200
Vendors	3,500	3,600	3,600	3,500	3,500
Exterminators	7,800	7,900	7,900	7,900	7,900
Permit Applicants	1,445	1,420	1,420	2,542	2,550
Farmers using pesticides			Figures Not Available		
Residents using pesticides			Figures Not Available		

RESULTS

Operational Outputs:

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
No. of Licences and Permits Issued					
- Vendors	3,500	3,600	3,600	3,500	3,500
- Operators	1,300	1,300	1,300	1,600	1,600
- Structural Exterminators	1,000	1,000	1,000	1,000	1,000
- Land Exterminators	6,400	6,500	6,500	6,500	6,500
- Water Exterminators	400	400	400	400	400
- Custom Sprayers	575	550	550	550	500
- Water Permits	500	500	500	550	550
- Land Permits	200	200	200	1,192	1,200
- Structural Permits	170	170	170	250	250
Applications for examinations received	N/A	N/A	N/A	3,000	3,000
Examinations conducted	N/A	N/A	N/A	2,100	2,100

Program Outputs:

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
Licensed vendors, operators and exterminators with unsatisfactory performance	On an annual basis there are ususally six licence withdrawals or reprimands due to the unsatisfactory performance of licencees.				

Program Effects:

Cases of pesticides misuse by farmers	On an annual basis there are usually no significant cases, or a single significant case, of pesticides misuse by farmers resulting in a loss of crops or animals.
Cases of pesticides misuse by the public	On an annual basis there are usually no significant cases, or a single signficant case, of pesticides misuse by the public resulting in illness. There have been no pesticides-related deaths.
Presence of pesticides residuals in the environment	Surface water monitoring data indicate a few exceedences of criteria for pesticides in use. Most exceedences are noted among pesticides now banned or severely restricted. Criteria exceedences are indicated for the Thames, Grand and Saugeen River basins on the following page:

PESTICIDES CRITERIA EXCEEDENCES

Type	Objective Level[1] (ug/L)	THAMES BASIN[2] No. of Samples	THAMES BASIN[2] No. of Criteria Exceedences	THAMES BASIN[2] Maximum (ug/L)	GRAND BASIN[2] No. of Samples	GRAND BASIN[2] No. of Criteria Exceedences	GRAND BASIN[2] Maximum (ug/L)	SAUGEEN BASIN[2] No. of Samples	SAUGEEN BASIN[2] No. of Criteria Exceedences	SAUGEEN BASIN[2] Maximum (ug/L)
HERBICIDES										
Dicamba	200.0	56	0	1.1	38	0	<0.1	37	0	1.2
Simazine	10.0	48	0	<0.3	22	0	<0.02	37	0	0.1
2,4-D	4.0	56	0	2.1	38	0	0.3	37	0	0.4
INSECTICIDES										
Chlordane	0.06	59	0	<0.01	47	0	<0.02	44	0	<0.01
Diazinon	0.08	59	0	<0.05	38	0	<0.05	44	0	<0.05
Endosulphan	0.003		N/A		38	2	0.021	44	2	<0.005
Malathion	0.1	59	0	<0.1	38	0	<0.1	44	0	<0.1
Methoxychlor	0.04	59	0	<0.04	46	0	<0.04	44	0	<0.04
Dieldrin[3]	0.001	59	4	0.003	43	2	0.008		N/A	
PP-DDT[3]	0.003	59	0	<0.002	47	1	0.091	44	2	0.36
OP-DDT[3]	0.003	59	0	<0.002	47	1	0.009	44	2	0.087

1. Objectives based on Water Management - Goals, Policies, Objectives and Implementation Procedures of the Ministry of the Environment, November, 1978.

2. Source: Sample Information System Retrieval of 1981 OMAF Pesticide data.

3. These pesticides are now banned or restricted.

PESTICIDES USE ON FIELD CROPS IN THREE DRAINAGE BASINS AND CONCENTRATION LEVELS OF PESTICIDES IN WATER

	GRAND DRAINAGE BASIN			THAMES DRAINAGE BASIN			SAUGEEN DRAINAGE BASIN		
	Quantity* Used (kg)	Concentration Range** (ug/L)	Mean Concentration** (ug/L)	Quantity* Used (kg)	Concentration Range** (ug/L)	Mean Concentration** (ug/L)	Quantity* Used (kg)	Concentration Range** (ug/L)(ug/L)	Mean Concentration
Atrazine	156,550	4.80 - 0.20	0.556	219,500	8.10 - 0.20	1.533	)		
Triazine Herbicides Excluding Atrazine	74,980	0.600 - <0.020	0.089	99,830	3.30 - <0.02	<0.173	)80,440	2.7 - <0.020	<0.065
Phenoxy Herbicides	43,520	0.300 - <0.100	<0.145	30,810	2.10 - <0.10	<0.179	31,210	3.1 -<0.100	<0.158
Other Herbicides	124,910	N/A	<1.00	399,570	N/A	<1.0	10,890	N/A	<1.0
Insecticides	17,080	<5.0 - <.001	<0.460	32,800	<5.0 - <0.001	<0.472	2,160	<5.0 - <0.001	<0.490
Nematocides	104,010	N/A	N/A	135,910	N/A	N/A	280	N/A	N/A
Fungicides	480	N/A	N/A	1,320	N/A	N/A	120	N/A	N/A
Growth Regulators	52,920	N/A	N/A	48,810	N/A	N/A	N/A	N/A	N/A

* 1978 data from Survey of Pesticide Use in Ontario, 1978, Ontario Ministry of Agriculture and Food, pp. 14-15.

** Concentrations are from water samples at the mouths of each river. 1981 Ontario Ministry of Agriculture and Food Pesticides data.
Note: For some pesticide groups concentration ranges are very large as some types of pesticides can only be detected at very high levels (e.g. 5 ug/L) while others can be detected with considerably more detailed accuracy. The variation in detection levels causes standard deivations around the mean to be very high.

EFFICIENCY

Appropriate indicators not developed.

RESOURCES

	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
. Expenditures ($000's)	2,242.4	2,468.0	2,739.0	3,843.0
. Person-Years	48.3	52.3	52.3	73.0
. Revenue ($000's)	274.0	320.0	320.0	300.0

Head Office 19
Region PCO's 15
& PAC 4
38

52.3
38
14.3

73.0
38
35.0

MBR PROJECT ON ENVIRONMENTAL ASSESSMENT

OBJECTIVE

To subject proposals for major undertakings to a review process in order to provide for the consideration of natural and environmental factors in their development.

DESCRIPTION

The resources assigned to this MBR project include:

- the person-years and budget of the Environmental Assessment Branch and of the Environmental Assessment Board, and
- the person-years and budget of the Legal Services Branch relating to hearings under the Environmental Assessment Act.

WORKLOAD

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
Types of major undertakings subject to the E.A. Act:	All Provincial and Municipal projects having the potential to significantly affect the environment are subject to the E.A. Act. Selected private sector undertakings are also designated.				

RESULTS

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
(1) Operational Outputs					
No. of new projects undergoing pre-submission consultation	29	41		56	62
Formal submissions received during year: - individual	8	10	Planning data	10	N/A
- class	3	3	not available	1	N/A
	11	13		11	19
Environmental assessments submitted, but withdrawn or exempted	4	2		1	0
Exemptions granted under S.29 of the E.A. Act	48	36		15	40-50
Formal submissions under review at year-end	30	34		28	34
Environmental assessments referred to the E.A. Board for hearings	1	2		3	23
(2) Program Outputs					
Approvals granted without conditions	1	0		0	0
Approvals granted with conditions	19	8		20	23
Proposals rejected	0	0		0	0

(3) Program Effects

Benefits of the environmental assessment process include:

- the avoidance of future damages to the environment due to inadequate project planning, and
- greater public confidence that major Provincial and municipal undertakings are adequately protecting the environment.

EFFICIENCY

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
Average number of person-days devoted to review of individual environmental assessments	N/A	40	N/A	42	45
Turnaround time *	N/A	324	N/A	N/A	N/A

* Average number of calendar days from the time a formal Environmental Assessment document is submitted to the Minister until a notice of approval is issued.

RESOURCES

	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
. Expenditures ($000's)	1,830.3	2,837.5	2,365.0	2,698.0
. Person-Years	38.6	39.4	39.4	41.1

MBR PROJECT ON SURFACE AND GROUND WATER QUANTITY MANAGEMENT

OBJECTIVE

To regulate the major water drawers in Ontario in order to ensure the fair sharing and conservation of surface and ground water.

DESCRIPTION

The resources assigned to this MBR project include:

- the person-years and budget of Water Resources Branch relating to water quantity management policy development and planning functions, and the administration of the water-taking permit program and the well-drillers program, and
- the person-years and budget of the Regions relating to the issuance of water-taking permits, the audit of well-drillers, and the resolution of local water-use conflicts.

RESULTS

Appropriate results indicators are under development.

RESOURCES

	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
. Expenditures ($000's)	-	-	-	656.0
. Person-Years	-	-	-	17.0
. Revenue ($000's)	-	-	-	5.0

CORPORATE LEVEL MBR PROJECTS

CORPORATE MBR PROJECT ON DRINKING WATER QUALITY

OBJECTIVE

To ensure that drinking water supplies are adequate for the protection of human health.

This corporate MBR project summarizes certain information from:

(i) the MBR Project on Water Servicing Infrastructure,

(ii) the MBR Project on the Regulation of Communal Water Supply Facilities, and

(iii) the MBR Project on the Operation of Ministry Water Supply Facilities

concerning the adequacy of drinking water quality.

RESULTS

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
Percent of overall capacity of Ministry operated facilities meeting drinking water quality objectives	N/A	N/A	N/A	69.7%	97.6%
Percent of overall capacity of Municipally operated facilities meeting drinking water quality objectives	N/A	N/A	N/A	90.0%	92.9%
Percent of overall capacity of privately operated communal facilities meeting drinking water quality objectives	Data not available				

In 1982-83, 123 communal drinking water facilities were assessed as not providing a continual supply of drinking water of adequate quality. Improvements were expected to be underway or completed by year-end at 97 of these facilities. By the end of 1983-84, the number of facilities not providing adequate qualities of drinking water on a continual basis is expected to be reduced to 95. Of these, improvements were expected to be underway or completed by year end at 69 of these facilities.

SUMMARY AND ASSESSMENT

Remedial measures are currently planned or underway to resolve most of the outstanding drinking water quality problems. Ministry efforts are shifting to more rigorous assessments of the significance of toxic contaminants in raw water sources.

CORPORATE MBR PROJECT ON INFRASTRUCTURE DEVELOPMENT

OBJECTIVE

To encourage the development of a water supply and sewage treatment infrastructure that will support the Province's economic and social development.

This corporate MBR project summarizes certain information from

(i) the MBR Project on Water Servicing Infrastructure, and

(ii) the MBR Project on Sewage Servicing Infrastructure

concerning the supply of and demand for communal water and sewage services.

RESULTS

1. Water Treatment Infrastructure Development

Local water treatment infrastructure is considered adequate when daily capacities are twice the average daily pumpage. (The reserve is required to meet peak demands and emergency needs.) The relationship between facility capacities and pumpage for the Province is shown below:

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
Infrastructure Capacity (Maximum Daily Pumpage in 10^3 m^3/D)	9,168	9,710	10,600	9,841	9,886
Water Demands (Average Daily Pumpage in 10^3 m^3/D)	4,559	4,878	5,340	4,964	5,078

Individual community needs are outlined below:

	Communities with Sufficient Drinking Water Infrastructure Capacity	Communities with Insufficient Drinking Water Infrastructure Capacity			
		Total at Start of Year	Resolved During Year	Underway at Year-End	Not Addressed
1982-83 Preliminary Actual	388	66	33	26	7

2. Sewage Treatment Infrastructure Development

The relationship between facility capacities and flows for the Province is shown below:

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
Infrastructure Capacity (Maximum Daily Pumpage in 10^3 m^3/D)	5,759	5,800	6,323	5,890	6,025
Service Demands (Average Daily Flow 10^3 m^3/D)	4,377	4,402	4,777	4,495	4,597

Individual community needs are outlined below:

	Communities with Sufficient Sewage Infrastructure Capacity	Communities with Insufficient Sewage Infrastructure Capacity			
		Total at Start of Year	Resolved During Year	Underway at Year-End	Not Addressed
1982-83 Preliminary Actual	354	40	16	18	6

SUMMARY AND ASSESSMENT

The capacity of the water and sewage infrastructure in place across the Province is adequate for most communities, and recent downward revisions of population forecasts have at least temporarily reduced the need for widespread capacity increases.

Ministry efforts in the future are expected to place more emphasis on the maintenance of the existing infrastructure, and less on infrastructure expansion.

CORPORATE MBR PROJECT ON SURFACE AND GROUND WATER QUALITY

OBJECTIVES

To ensure that all surface waters are of a quality which is satisfactory for aquatic life and recreational uses.

To protect the quality of ground water for the greatest number of beneficial uses.

This corporate MBR project summarizes certain information from:

(i) the MBR Project on Sewage Servicing Infrastructure;

(ii) the MBR Project on the Operation of Ministry Sewage Treatment Facilities;

(iii) the MBR Project on the Management of Point Sources of Air and Water Pollution;

(iv) the MBR Project on the Management of Non-Point Sources and Transboundary Pollution; and

(v) the MBR Project on Waste Disposal.

DESCRIPTION

The results outlined in this MBR project relate only to surface water quality. Attempts will be made in future reports to quantitatively and qualitatively describe groundwater quality.

There are two major data sets in this MBR project to evaluate provincial surface water quality. In the first, on pages 143 to 180, each of the Province's 144 Tertiary Watershed Units and the Canadian portion of the Great Lakes is assessed with respect to:

- the main pollution sources affecting water quality in the watershed,
- the main water quality parameters of concern,
- any environmental effects evident as a result of the pollution sources.
- the major social and economic impacts associated with the environmental effects, and
- the present and planned status of environmental protection efforts.

The second data set, outlined on pages 183 to 188, summarizes the results of the long term water quality monitoring stations in the Pronvince by Major Water Basin for a number of indicators of water quality. Exceedence conditions should not be considered as representative of overall ambient water quality conditions, since a number of the monitoring stations are located downstream of major point discharges. Water quality trends in the Major Water Basins are evaluated as "Improving", No Change", or "Deteriorating".

RESULTS

The evaluation of the 144 Tertiary watersheds in the Province on the following pages, utilize this structure and coding system:

MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
8 POSSIBILITIES:	14 POSSIBILITIES:	8 POSSIBILITIES:	7 POSSIBILITIES	4 POSSIBILITIES:
Ag = Agriculture In = Industrial/ Manufacturing Discharges (direct) Ur = Urban Runoff/ Sewer Overflows STP = Sewage Treatment Plant Loadings Pr = Private Sewage/ Recreational Practices At = Atmosphere Deposition L = Landfill Site Leachates O = Other	1) BOD 2) Suspended Solids 3) Dissolved Solids 4) Nutrients 5) Metals 6) Bacteria or Viruses 7) Acidity 8) Radionuclides 9) Organics 10) Ammonia 11) Chlorine 12) Cyanide 13) Phenols 14) Other	a) Low dissolved oxygen b) Excessive aquatic growth - eutrophication c) Bacterial or viral contamination d) Acidification e) Poor aesthetics (objectionable deposits, odours, foaming, colour, etc.) f) Fish kills g) Destruction of fish habitats or the aquatic ecosystem h) Toxicity - to fish - to other aquatic life i) Fish contamination - tainting of flesh - limit on consumption required j) Other	1) Cannot be used as water supply 2) High water treatment costs 3) Health Risk - contact recreational sports 4) Non-contact recreation affected 5) Poor quality or reduced fishing (commercial, sport) 6) Special or unique features of watercourse damaged 7) Other	a) Meets requirements specified by the relevant standard b) Abatement is required to meet existing standards, guidelines or criteria c) Additional regulatory Programs/ Policies are required d) Enforcement planned or underway

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
GREAT LAKES - ST. LAWRENCE SYSTEM					
2MC	In	5, 14 (PCBs), 13	i, c, b	5*, 3, 4	b, c
Lower St. Lawrence R.	Ur	6	c	3	b, d
Cornwall-Massena	STP	6	c	3	b, d

* Note: 5 = Fish contamination with PCBs; mercury noted downstream of Cornwall/Massena area (Lake St. Francis, Quebec).

Comments: - Industrial abatement measures in progress to identify and reduce Ontario in-plant sources of trace contaminants (PCBs, metals, phenols, bacteria). New York State (Massena) sources of PCB contamination are under investigation and abatement measures proposed for inclusion in upcoming SPDES permit renewals. Cornwall phenol problem violates water quality objective, necessitating policy review for pulp and paper-related phenol wastes and associated bacteria.

- Cornwall STP expansion and sewer system upgrading will be initiated once funding is approved.

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2MB	In	10	h	5	d
West St. Lawrence River	STP	4	b	minimal	a

Comments: - Abatement program is underway to reduce ammonia discharges at Genstar in Maitland.

2 MA	Ur	6, 4	c, b	3, 5	d
Western St. Lawrence	Ag	4, 6, 2	c, b	3, 5	b
Tributaries	L	5, 1, 10	h, g	5	b
	STP	1, 4, 6	c, b	3, 5	d

Comments: - In general, water quality is good in the Western St. Lawrence River tributaries.

- Sewer separation programs are in progress in Kingston and Brockville to reduce storm sewer overflows.

- Abatement is required to mitigate agricultrual problems associated with cattle watering, manure and erosion.

- Abatement of leaching problems from Brockville landfill site in progress.

- Hydraulic upgrading is needed at Gananoque sewage treatment lagoons.

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2LB	In	1, 2, 10	h, g	5	b*
Lower Ottawa River	Ag	4, 2, 6	b, c, g	2, 3, 4, 5	b, c
	STP	1, 4, 6	a, b, c	3, 5	b

Comments: - * Closure of CIP, Hawkesbury has been announced.
- Agricultural controls required to reduce manure, cattle watering and erosion problems.
- Most STP's on Ontario side of river have adequate treatment. Raw sewage discharges occur in Quebec but treatment measures are not planned.

2LA	Ag	4, 6	b, c	3, 5	b
Rideau River	Ur	6, 4	c	3	b,d
	STP	1, 4	b, a	5	b

Comments: - Agricultural problems require attention throughout the watershed.
- Urban runoff is affecting beaches in Ottawa; a stormwater management study is underway.
- Localized STP problems in Kemptville, Smith Falls and Perth. Improvements considered at Kemptville and Perth STP's.

2KF	STP	1, 4, 6	c (minor)	3 (minor)	a, d, b
Mississippi River	Ag	2, 4, 6	c, b (minor)	3 (localized)	b
Lac Deschenes	At	7	d	5	b, c

Comments: - Water quality is mostly excellent in the watershed.
- Localized STP bypassing problems at Almonte and Carelton Place. Further abatement may be required at Carleton Place.
- Localized manure and cattel watering problems require attention.
- Some lakes are sensitive to acid precipitation. International efforts are required.

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2KE Lower Madawaska River	STP	6	c	3	a, b

Comments: - Most of the watershed has excellent water quality.
- Sewage bypassing at Arnprior may require additional abatement measures.

2KC	Ag	4	b	2, 5	b
Allumette Lake -	O	14 (PCB's)	i	3	d
Lac Des Chats -	STP	4, 1	b (minor)	5 (minor)	a, d
Ottawa River					

Comments: - Most of the watershed has excellent water quality.
- A farmer education program has been offered as a measure to ultimately reduce nutrient problems in Muskrat Lake.
- PCB contamination of Lake Clear has been investigated. Abatement program is recommended.
- Phosphorus removal program under development for Pembroke STP. Other STP abatement is adequate.

2KB
Petawawa River

Comments: - Good water quality in the watershed; no pollution sources and no problems.

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2KA	At	7	d	5	c
Holden Lake - Ottawa River	In	1, 2, 3	a, e, g	5, 6	b, c

Comments: - Most of the watershed has good water quality but some lakes are sensitive to acid precipitation. There are heavy metals problems unrelated to known waste inputs.
- Some water quality problems in Ottawa River are belived to be caused by pulp and paper companies in Quebec. Cooperation is needed with the Federal and Quebec governments to resolve the problem.

2JE	Ag	4, 2	b, c	4	b, c
Lake Temiskaming	STP	4	b	-	a
Ottawa River	In	5, 14 (Mg, As)	g	1	b, d, c

Comments: - Wabi River and several other small streams have been degraded by agricultrual runoff. Work is required together with Ministry of Agriculture to solve the problem.
- The Cobalt mining camp has left serious mercury and arsenic contamination in localized areas, especially Farr Creek. Limited consumption of fish is recommended from some lakes in the area.

2JD	At	7	g, d	5, b	b, c
Montreal River					

Comments: - Several lakes and streams have fisheries problems that are belived to be associated with acidification. Work coordinated with MNR is required to better define problems and to reduce the environmental impacts.

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2JC Blanche River	Ag	4, 2	b, e	4 (poor aestethics)	b,c
	STP	4	b, a, e	-	b, d

Comments: - The Blanche River exceeds phosporus guidelines for 20-30 miles due to erosion and agricultural runoff.
- Eutrophication is a problem in Round Lake and Murdock Creek, the latter also having low dissolved oxygen levels.
- Phosphorus removal was initiated in 1981 for Kirkland Lake. Improvements in water quality are expected.

2HM	Ur	6, 4	c, b	3, 5	a, c, d
Eastern Lake Ontario -	In	9	i	3	b
Upper St. Lawrence	STP	4, 6	b, c	5	b
River - Bay of Quinte	Ag	4, 6	b, c	5	b

Comments: - Water quality is affected by upstream industrial discharges which have resulted in increased nutrients and organics.
- Urban runoff problems occur at Kingston and Collins Bay. Urban Drainage policy will determine the appropriate course of action.
- Phosphorus removal objectives are not met at several sewage treatment plants. Abatement project underway in Napanee.
- Agricultural inputs are significant. Phosphorus control measures may be required.

2HM	Ur	6, 4	c, e	5, 4	b, c
Eastern Lake Ontario	Ag	4, 6, 2	c, b, g	5, 3	a
Tributaries	Ind	1	a	5	a

Comments: - Urban runoff from Kingston is a major cause of poor bacteriological quality. Urban Drainage Policy will determine the appropriate course of action.

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2HL	In	5	h, j (drinking water)	3, 5	d (Deloro)
Moira River	Ag	4, 6, 2	c, b, g	5, 3	b (general)
	Ur	6	c	3	d (Belleville)

Comments: - Water quality is generally good but there is arsenic contamination below Deloro. Abatement is in progress.
- Abatement is required to reduce agricultural problems related to manure, erosion and cattle watering.
- Sewer bypassing problems at Belleville are being corrected.

					1) 2) 3)
2HK	In	8, 2, 6	c	3	a & b, d, b
Trent River, Crowe River	Ag	4, 2, 6	b, c	3, 5	b

Comments: 1) Madawaska Mines have closed but radiological objectives are not met at the abandoned mine tailings at Farrel Lake. A biological survey of the tailings is underway.
2) Suspended solids reduction program is underway for Trent Valley Paper.
3) Bacteriological problem resulting from Domtar, Trenton has recently been detected. Necessary abatement measures have not yet been determined.
- Manure, erosion and cattle watering problems require control measures.

2HE	Ag	4, 6, 2	b, c, g	5, 3	b
1. Prince Edward County Streams	In	4	b	5	b

Comments: - Most streams are turbid and nutrient enriched.
- Manure, erosion and cattle watering problems require control measures.
- Hardee Canning at Bloomfield causes localized nutrient problems. Further abatement is required.

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2. Lake Ontario - Bay of Quinte	STP	4, 6	a, b, c, e	2, 4, 3	b, c, d
	Ag	4	a, b, e	2, 4	b, c
	Ur	6, 4	c	3	b, c
	In	13			
Comments: - Water quality has improved following point source phosphorus controls. Abatement programs are underway at Napanee to comply with IJC phosphorus objectives; however, additional abatement measures will be required at Arctic Gardens - Deseronto. Trenton, Belleville, Picton and Deseronto STP's do not meet regional phosphorus removal objectives. Agricultural inputs are significant, and abatement measures for phosphorus control may be required.					
2HH Kawartha Lakes Drainage	Ag	4, 9	b, i, e	5	
	STP	4, 9	b, i, e	5	
Comments: - MOE has prepared a plan of study for 11 different areas within the Kawartha Lakes. Over the next four years water quality management studies will be carried out.					
2HJ Otonabee River - Rice Lake	STP	4, 9	b, i, e	5	a
	Ur	4, 9	b, i, e	5	b
Comments: - Nutrient loadings from Peterborough STP cause excessive algal growth in Otonabee River and Rice Lake.					
- Peterborough industries may contribute to contamination by organics. Abatement of known source contaminants is ongoing.					

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2HG	STP	4, 1, 6, 10	b, a, e	5	b
Scugog River	Ag	2, 4	j	2	b, c
Comments: - Nutrient rich water is aggravated by STP discharges from Lindsay STP that have not been chlorinated. - A poorly developed agricultrual drainage channel has caused high turbidity downstream at Lindsay water filtration plant. Reparation and stabilization work of the drains are underway.					
2HF	STP	4	b	2	b
Cameron Lake Drainage	Pr	4	b	-	a
Comments: - The northern portion of this watershed is largely undeveloped. - Operational problems at the STP's in Haliburton and at Leslie M. Frost Centre should be rectified although adverse impacts from the plants are not significant.					
2HD	STP	4, 6, 10, 11	b, c, h	5, 3, 1	b, c
1. Lake Ontario Tributaries (from Pickering to Cobourg)	O - stream rechannel-ization	2, 8	e, g	5	b
	Ur - storm water	2, 9, 4	i, e	5	a

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2HD (cont'd)					
1. Lake Ontario Tributaries (from Pickering to Cobourg)					
Comments: - Two of four STP's discharging into the area creeks cause adverse water quality conditions. A new facility has been approved for Colborne Creek; corrective actions are being discussed for Cobourg Creek. - An Environmental Assessment is presently being undertaken for rechannelization of the Ganaraska River for flood control purposes to handle storm water discharges to the river. Channelization concerns relate to: configuration of the new channel; the need for the project in upstream ares; problems during construction.					
2. Lake Ontario Port Hope (2HD)	In	8, 5, 9 (PCBs)	i (PCBs) j, radioactive contamination of sediments	5 (with 2 or 1 a possibility)	a (see comments)
Comments: - Drinking water quality at Port Hope WTP (west of Port Hope Harbour) not presently impaired by industrial discharges although occasional raffinate spills by Eldorado Nuclear have led to elevated levels of radionuclides (226 Ra) confined to Port Hope harbour turning basin. Sediments of turning basin contaminated with radionuclides, metals and PCBs, precluding unrestricted dredged spoils disposal. - Source(s) of PCBs under investigation and abatement probably required. - Expansion of uranium hexafluoride production capacity proposed by Eldorado Nuclear and potential impacts (largely thermal) on local fishery under investigation.					

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2HC	Ur	2, 6, 4	g, c, b	5, 3, 1	b, c
1. Lake Ontario Tributaries (from Etobicoke to Pickering)	STP	4, 10, 11	b, c, h	5, 3, 1	b, c

Comments: - A large portion of this area is urbanized and streams such as the Humber and Don Rivers receive flows from storm and combined sewers. It is suspected that these flows are responsible for the deteriorating water quality in the basin including the lakefront areas.
- The number of STP's discharging to streams has decreased because of the construction of the York-Durham Sewage System. Improvement in the water quality is expected.
- Agriculture has the potential to adversely affect water quality in the area. However, during the last few years water quality problems have not been attributed to this activity.
- Most of the streams in this basin are included in the Toronto Area Water Management Study which is intended to demonstrate existing water quality problems and recommend and implement corrective measures.

2. Lake Ontario Toronto Waterfront	Ur (storm & combined overflows)	9, 6, 4	i, c, b, e	5, 3	d, c
	STP (Humber, Main)	6 (inter-5 mittent)	c	3	
	Lakefilling (Leslie St. Spit)	2	e, localized	7*	d

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2. Lake Ontario Toronto Waterfront (cont'd)	Dredging/ Dredged Spoils Disposal (Keating Channel)	2	e		a

Comments: - 7*: Issue of high public interest and attention as stability of headland not confirmed. Short and long term effects under study by MOE.
- Ongoing sewer separation program should further reduce bacterial and other contaminant loads. A special 5-year Ontario Ministry of the Environment study is underway (TAWMS - Toronto Area Watersheds Management Study) to develop a comprehensive water management plan for the three watersheds entering the Toronto Waterfront.
- Extension of the Main STP outfall, presently under study by an interagency task force, should, when constructed in the next decade, improve overall water quality along the eastern sector of the Toronto Waterfront.

2HB	STP	4, 10, 11	b, c, h	5, 3	b
1. Lake Ontario Tributaries (from Burlington-Etobicoke)					

Comments: - Several water quality surveys indicate that water quality is being degraded by STP effluents to the extent that provincial water quality guidelines at times are exceeded. Potential for further degradation exists. Grants for expansion of plants are being sought by the concerned municipalities.
- Storm water runoff and agriculture could also potentially damage the basin water quality. Presently, these activities do not appear to cause problems.
- There is a proposal to include the Credit River basin in the Toronto Area Water Management Study. (See 2HC).

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2. Lake Ontario	STP	10, 1, 4	a, b, c	5, 7*	b, d
Hamilton Harbour	In	5, 10, 13	a, i	5, 7*	b, d
	Ur	2, 1, 6	e, c, g	5, 7*	b, c

*Note: 7 = Source of contamination and enrichment to Lake Ontario

Comments: - Federal harbour status restricts use. Waters have more recently been used for commercial navigation, industrial cooling, waste reception and limited recreational boating. Water quality has improved since the 1960's through continued industrial and municipal abatement. Additional abatement is either underway or being planned, except for urban runoff where additional water management policies are required.

2HA

1. Western Lake Ontario Tributaries	Ag) O*)	2, 4, 6	e (turbidity), c,g	3, 5	b, c

Comments: - Abatement policies are required to reduce agricultural loadings.
- O*: Very low streamflows cause streams to dry up or stagnate endangering aquatic life.

2. Lower Welland R.	Ur) STP) In)	2, 4, 10	g, h, i	3, 5	a, d

Comments: - Industries are under control orders or abatement programs. Welland STP is being upgraded.
- Water quality is being investigated more thoroughly as part of the Niagara River Study.

3. 12 Mile Creek	In	1, 2, 6	e, g, i	3, 5	a, d
	Ur	1, 2, 6	c	3	b, c

Comments: - Impacts of paper mills cannot be detected in 12 Mile Creek using conventional parameters.
- Ontario Hydro diverts 6,500 cfs from Welland Ship Canal to 12 Mile Creek.

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2HA (cont'd)					
4. Niagara River	In	9, 5	i, j*	5, with 2 a possibility	a, c
	STP	9, 4, 6	i, j*, c	5, 2 possible, 3	b, d
	L	9, 5	i, j*	3, 5, 2 possible	c

*Note: j = potential impact on water supplies

Comments: - Numerous industrial and municipal discharges, both direct and indirect, contribute to trace contaminants loadings in river, with the majority (both in number and flow) on the U.S. side. Violations of aquatic life criteria for some heavy metals as well as for phosphorus and bacteria are mainly confined to the U.S. side of the upper Niagara River. Surveys of all Ontario point sources and of 10 major U.S. sources were conducted in 1981 to evaluate loadings. SPDES permit renewals for 16 U.S. point sources will include trace contaminants. Reconstruction of activated carbon system in Niagara Falls, N.Y. STP to commence in 1982.

- At least four of the 215 disposal sites on the U.S. side of the river are known to have leaked contaminants into the river (Love Canal, Hyde Park, 102nd Street and Hooker "S" area). In addition to organics and metals, some of these sites contain radioactive materials. Further abatement work is required on these as well as other high priority sites.

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2GA Upper Grand River	Ag STP In (Potential)	2,4 3, 4, 10 9,14 (spills of persistent toxic substances,PTS)	b, e a, b, e h, j (potential impact on water supply)	5, 2 5, 2 2, 5	b, c b, d (GRIC study) a
Comments: - Agricultural land drainage in the upper basin contributes nutrients to water courses. Present controls are inadequate. - STP's are large (Guelph, Waterloo, Kitchener) and contribute to plant and algae growth. STP discharges may also result in un-ionized ammonia criteria not being met. The GRIC study which is being completed is addressing these problems. - Discharges from Uniroyal chemicals in Elmira have caused fish kills. Such discharges could potentially cause contamination of existing and future water supplies in Kitchener-Waterloo and Brantford. A study is in progress of impacts of Uniroyal activities on surface and ground water.					
2GB Lower Grand River	0 (Upstream Ag. & STPs) Ag	2	e (turbidity)	2, 7 solids loading to Lake Erie	a
Comments: - Stream is slow moving and has limited plant growth because of turbidity . No particular problems are noted.					

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2GC Fifteen Lake Erie Tributaries (eastern Lake Erie)	Ag STP In	2, 4, 10 4, 11, 1 1	e, g, h e, h, c a, e, h	5, 4 3, 4, 5 5	b, c b, d b, d
Comments: - Agricultural activities have resulted in heavy erosion and sedimentation throughout the area. Soil conservation is required. Livestock operations cause manure spills and trampled stream banks. Heavy demands on water quantity on some streams by tobacco irrigation. Some streams are high quality trout streams. - Improved sewage treatment is underway at St. Thomas and Aylmer. - A new tretment system has been installed at Ford in Talbotville which should be adequate.					
2GF Nine Lake Erie Tributaries (central Lake Erie)	Ag (row crops)	2, 4	e, g	4, 5, 6	b, c
Comments: - Severe erosion, particularly in western part of watershed. This has resulted in turbidity in Rondeau Harbour and has drastically affected fishery and general ecology. A local farming committee has been established to work with government agencies on deciding on and implementing erosion-control measures. Numerous voluntary control measures (e.g. fall cover crops) have been put into place in 1982. MOE is funding a study.					

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2GH	Ag	2, 4	e, g	5, 4	b, c
1. Essex County, Lake Erie Tributaries	Pr	6, 1, 4	c, a, e	3, 4, 5	b, c
	Ur	5, 6, 2	c, h, e	3, 4, 5	b
Comments: - Row crop agriculture and agricultural drainage have caused heavy erosion and sedimentation in the area. Efforts are required to preserve soils and streams. - Many septic systems are on tight soils which have resulted in overflows affecting perhaps one half of the watershed. Solutions are costly and technically difficult. - Urban drainage in Windsor has damaged Little River and Turkey Creek.					
2. Lake Erie Wheatley Harbour	In	1, 2, 6	a, c, e	1, 3, 5	c
Comments: - Omstead Foods Ltd. has reduced BOD and suspended solid loadings through the introduction of an additional clarifier and two additional mechanical aerators. These measures still are not adequate to improve the harbour quality. Further corrective measures are necessary.					
3. Detroit River	Ur	6, 9	c, g	3, 5	b, d
	STP	2, 6, 9	c, g	3, 5	b, d
Comments: - A $20 million program is underway to provide a sewage collection system, including pumping station and forcemain, in Sandwich West Township. Upon the completion of this program, the bacteriological quality of the river along the Canadian shore will be improved. The City of Windsor is presently expanding its westerly wastewater plant to 36 MIGD. At Amherstburg, a proposal to expand the existing facility, which is a primary sewage treatment plant, is under review by the Ministry. Expansion depends on budget approval. Plans are underway to expand Windsor's Little River STP, and a Pollution Control Strategy for Windsor is under consideration.					

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2GD	Ag	2, 4, 10	b, f, g	1, 5, 7	b, c
Upper Thames River	STP	4, 6, 11	b, c, a	5, 3, 4	b, d
	Ur	2, 4, 6	b, c, c	5, 3	b, d

Comments: - Problems resulting from agricultural activities include erosion, sedimentation, manure spills and livestock trampling of stream banks. Soil conservation is promoted by the Thames River implementation committee.
- Sewage treatment plants provide adequate treatment but limited stream dilution is a problem. Remedial measures are being investigated.
- The Stratford-Avon River Environmental Management Project is addressing remedial measures for Avon River.

2GE Lower Thames River	Ag (row crops)	2, 4	e, g	4, 5	b, c

Comments: - Erosion and sedimentation are common problems throughout the area. Thames River Implementation Committee is actively demonstrating erosion control.

2GG	Ag	2, 1, 10	g, f, e	5, 4, 2	b, c
1. St. Clair River - Lake St. Clair Tributaries	In	1, 3, 9	e, g, i	5, 4, 1 (cattle watering objective exceeded)	b, c

Comments: - Agricultural activity has resulted in heavy erosion and sedimentation throughout the area. Conservation measures are required.
- The petroleum extractive industry discharges brine water to streams in the Petrolia area.

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2. St. Clair River	In	9, 13, 5 (residual mercury)	g, h, i	5 (mercury)	a, b and d
	Ur	6	c	3 (Sarnia Bay)	b

Comments: - Industries such as Esso Chemical, Imperial Oil, Polysar, Dow Chemical and Suncor at Sarnia and Shell, Petrosar, Dupont and Ethyl Corporation at Corruna contribute to organic contaminants in the river. Bio-oxidation treatment is being established at Polysar and will reduce the pollution level on the river. The completion of the Township Ditch to a distance of 70 m from the shoreline will affect a greater mixing for Polysar and all other industries located along the ditch. The impact of contaminant build-up on downstream industrial intakes will be prevented.

- Dow Chemical has also extended the Second Street sewer to affect efficient mixing.
- Sewer system overflows in the Sarnia area led to beach closures in Sarnia Bay. Studies are underway to investigate corrective measures.

2FF Eighteen Lake Huron tributaries (south Lake Huron)	Ag	4, 2, 10	b, f, g	5, 4, 7	b, c

Comments: - Row crops and livestock operations have caused erosion, sedimentation and manure impairment to streams. The Ausable-Bayfield Conservation Authority is aggessively demonstrating projects on erosion control and stream-bank stabilization. MOE has funded a project which identified major livestock operations which have adverse effects on water quality. The project methodology will likely be applied in other areas to assist MOE with its farm management program.

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2FE	Ag	4, 2, 10	b, e, g	7, 5, 6	b, c
Maitland River and	STP	4, 6	b, c, e	5, 7, 1	b, d
Two Other tributaries	In	3 (NaCl)	g		

Comments: - Agricultural activity has degraded general water quality in recent years. The Maitland Conservation Authority is attempting to challenge drainage proposals and to rehabilitate some streams. MOE, Water Resources Branch is planning a major watershed survey for 1987-88. In 1982 a study was funded by MOE to examine the relative significance of agricultural inputs.

- By treating sewage in an artificial marsh, adverse impact of Listowel's STP discharges may be reduced. Presently, the STP's at Listowel and Milverton adversely affect several kilometers of stream during discharge.

2FD	Ag	4, 2, 14 (temperature)	e, g, j (thermal)	5, 6	b, c
Twenty-Three Lake Huron tributaries (northern Lake Huron)	In	4, 14 (temperature)	b, e, j (thermal)	5, 6, 7 (fish entrainment)	b, c, d

Comments: - Row cropping, drainage and intensive livestock operations have adverse effects on water quality in the area. Streams are used for recreational activities and are ecologically sensitive.

- Industries (cheese factories and fish hatcheries) affect water quality on a localized basis. Bruce Nuclear Generating Station and future associated industry may degrade water quality.
- High quality fishery habitat might be affected if water quality reductions will occur down to the Provincial Objectives.

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2FC Saugeen River	Ag	4, 2, 14 (temperature)	e, j (thermal) b	6, 5	b, c
	STP	4	b, e	5	b, c
	In	4, 14 (temperature), 10	j (thermal), b, g	5, 6	b, c, d

Comments:
- Agricultural row cropping, drainage and intensive livestock operations are increasing in this area. Streams are recreationally important and ecologically sensitive. Saugeen River is to be intensively studied in 1984/85 by the Water Resources Branch.
- Industrial impacts are very localized. Fish hatcheries now require Certificates of Approval. Future extraction of large gravel deposits could threaten base flows.
- Sewage treatment effluent only incur localized impacts.
- High quality fishery habitat may be affected if direct discharges are not avoided.

2FA Bruce Peninsula Streams	Pr (cottages)	4	b, e	4, 5	b, c, d
	Ag	2, 4, 14 (temperature)	g, e, c	6, 5	b, c
	In (hatcheries)	4, 2			

Comments:
- Agricultural drainage projects are threatening some streams in the area. Fences are required to keep livestock away from stream banks.
- Landscape destruction by cottages is as much a problem as septic tank leakage and seepage.
- Both agricultural and cottage sources affect localized areas.
- If direct discharges are not avoided high quality fishery habitat may be affected.

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2FB Fourteen Georgian Bay Tributaries (western Georgian Bay)	Ag	4, 14 (temperature), 2	b, g	6, 5	b, c
	In	4, 5, 14 (temperature)	b, g	5, 6	b, c, d
	Pr	4	b, e	5, 6	b, c

Comments: - Agricultrual activity is increasing in this area. Streams are of recreational importance and ecologically sensitive.
- Fish hatcheries (main industry) must obtain Certificates of Approval.
- All pollution sources have localized effects, but fish habitat may be damaged if direct discharges are not avoided.
- Two cattle-fencing projects have been funded by MOE. More are being promoted by the North Grey Conservation Authority.

2ED	STP	6, 10, 11	b, c, h	1, 3	b, c
1. Nottawasaga River and Thirteen Other Tributaries					

Comments: - Water quality surveys indicate that streams are being degraded by sewage treatment plant discharges. Corrective action has been recommended.
- Agricultural and recreational activities have the potential to adversely affect water quality.

2. Collingwood Harbour	STP	4	b	4	b, d

Comments: - The expansion of the Collingwood STP began during 1980 and will be completed by 1983. The reduction in phosphorus levels below 1 mg/L will improve the water quality conditions in the harbour by reducing aquatic growth.

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2ED (cont'd)					
3. Penetang Bay to Sturgeon Bay (2ED, 2EC)	STP	4, 6	b, c	5*	b, d

*Note: Fish spawning areas are subjected to sedimentation by floating and attached algae.

Comments: - A decrease in phosphorus loading to the area from Penetang Bay to Sturgeon Bay has occurred since 1974. Further improvements are expected upon the expansion of the Midland STP and the construction of the proposed facility for Penetanguishene. Construction of a new sewage treatment plant at Victoria Harbour is underway.

2EC Severn River	No data available				
2EB	STP	4	b	-	a
Moon River and	Pr	4	b	-	a
Gohome River	In	1, 2, 4	b	-	a

Comments: - This watershed is not highly developed although many lakes are heavily used by seasonal cottagers.
- Most discharges to surface waters are from sewage treatment plants. Presently, the STP's operate satisfactorily, but eutrophication is still a problem in Gravenhurst Bay due to high phosphorus discharges prior to 1971.
- Kimberly-Clark in Huntsville is taking action to reduce contaminants in its discharge waters.

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2EA	At	7	g, d	5, 6	b, c
Nineteen Georgian Bay Tributaries (northern Georgian Bay)	Pr	4	b, e	4 (algae, no health risk)	a, c
Comments: - Some lakes or streams in the area have been measured to have pH of less than 5.2 or alkalinity of 0. Consequently, fisheries problems are expected. - Eutrophication of some localized areas of cottage lakes has occurred as a result of over development.					
2DD	Ur	6, 4, 5	c, b	3	b
French River and Pickerel River	Ag	4, 2	b, e	5, 7 (erosion)	b, c
	STP	6, 4	c, b	3	d
Comments: - Urban drainage causes closing of some local beaches on Lake Nipissing. Beaches near North Bay are similarly affected. - The Veuve River is seriously degraded by agricultural runoff for 20 to 30 miles before entering Lake Nipissing.					
2DC	At	7	d, g, h	5	c
Sturgeon River	In	1, 2, 6	a, e, g	4, 5	b, d
Comments: - Some lakes and streams in the area have fisheries problems as a result of acidification. Work coordinated with MNR is required to define the problems. - Four miles of the lower Sturgeon River are affected for short periods of the year by discharges from MacMillan Bloedel at Sturgeon Falls.					

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2DB	In	5	g, h	5	b, d
Lower Wanapitei River	At	7	d	-	c
Comments: - Portions of Romford Creek and Coniston Creek experience severe problems with industrial drainage and tailings discharges along with atmospheric metal loadings and runoff from old industrial kill zones.					
2DA	At	7	d, g, h	5	c
Upper Wanapitei River					
Comments: - Some lakes and streams in the area have fisheries problems from acidification. Work coordinated with M.N.R. is required to better define and solve the problems.					
2CG	Ag	2, 4	g, b	5	c
Manitoulin Island					
Comments: - Agricultural drains and runoff have caused problems in some localized areas.					

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2CF	In	4, 10, 5	g, h, a	5, 4, 1	b, c
1. Junction Creek (major trib to Spanish River)	STP	4, 1	g, h, a	5, 4, 1	b
	Ur	4, 5	e	5	b
Comments: - Junction Creek receives many municipal discharges and large industrial discharges, plus urban drainage and aerial loadings of metals from the mining industry. Abatement is planned and underway in some places, more will be required in the future.					
2. Vermilion River (major trib. to Spanish River)	Pr	4	-	-	-
	STP	4	b	-	a
	At	5	-	-	-
Comments: - During low flow periods, localized eutrophication reduces the appeal of Vermilion River to recreational users. The inflow of the Onaping River is expected to have localized impact on the Vermilion River.					
3. Onaping River (major trib. to Spanish River)	In	5	g, h	5	c
Comments: - Moose Creek (drainage from Inco and Falconbridge tailings) affects the river for approximately 10 miles. Acid sensitive lakes occur in this watershed.					
4. 7 North Channel tribs and minor tribs to Spanish River	At	7, 5	d, g	5	c
Comments: - Several lakes and streams have fisheries problems associated with acidification and/or high metals. Efforts together with MNR are required to better define the problem.					

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2CE Spanish River	In	1, 2, 9	a, i, e	5, 4, 2	b, d
Comments: - The Spanish River is affected by the discharge from E.B. Eddy for 40 miles downstream. Periodic fish kills occur. Abatement is being accomplished through a Control Order issued to the company. An attempt to provide higher flows during summer is being formulated.					
2CD Four North Channel Tributaries	In STP Ur	8, 10, 4 4 4	g, d, h b, e b	5, 2, 4 5, 2, 4 5	b, d d d
Comments: - Large portions of the Serpent River are affected by uranium discharges and discharges that occurred before abatement took place. - Elliot Lake, Esten Lake and Angle Lake are affected by municipal discharges from the past, but water quality should improve with recent abatement efforts.					
2CC Lower Mississagi River	At	7	-	-	c
Comments: - No effects monitored at this time. Increased monitoring is expected in the future.					
2CB Upper Mississagi River	At	7	d	5	b, c
Comments: - Some lakes or streams in the area have been measured to have pH < 5.2 or alkalinity of 0 for short periods of time from acidic deposition.					

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2CA	In	13, 12, 10	h, g, e	5	b, d
Fourteen St. Marys	Ur	4, 13	e	6	b
River and North	At	7	-	-	c
Channel Tributaries					

Comments: - Some of the smaller tributaries of the St. Marys River in the urban and industrial areas have been degraded from their natural conditions. Some lakes and streams are acid sensitive but no effects have been monitored.

2CA, 2BF	In	10, 12, 13, 5	h, e, g	5, 7 (trans-	b
St. Marys River				boundary pollution)	
	STP	6	c		b
	Ur	6	c	3	a

Comments: - Major sources of pollution to the St. Marys River are Algoma Steel, Abitibi Paper, the City sewage treatment plant and sewer system overflows.
- A new Control Order to Algoma Steel Corp. Ltd. is being issued and is covering all outstanding water contaminants.
- Abitibi Paper Company is currently installing a new clarifier and a diffuser outfall to reduce suspended solids and BOD loading and to affect rapid mixing in the river.
- A proposal for a new secondary wastewater treatment plant will alleviate hydraulic and organic loading from the existing plant.
- The expansion of puming station capacity in 1978 has led to a reduction of overflows and some improvements in river quality.
- A new sewage treatment facility for West End is in the approval/construction stage. Reduced overflows are expected.

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2BF 22 Lake Superior Tributaries (southeast Lake Superior)	At	7	-	-	c
Comments: - No effects monitored at this time but monitoring is expected in the future.					
2BE 21 Lake Superior Tributaries (Lake Superior Provincial Park area)	At	7	d	7	c
Comments: - Some lakes and streams in the area have been measured to have pH < 5.2 or alkalinity of 0 for short periods of time.					
2BD 31 Lake Superior Tributaries (from Lake Superior Prov. Park to Pukaskwa National Park)	At STP) Pr)	7 4	d b	7 6	c 2
Comments: - Some lakes and streams have been measured to have pH < 5.2 or alkalinity of 0 for short periods of time. - A small area at the mouth of Michipicoten River has a eutrophication problem.					

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2BB Pic River and Two other Lake Superior Tributaries	In-GECO Mines (Noranda)	3, 5, 10	a, g, h	4, 5, 6	a, d*

Comments: - A lengthy period of operation by two base metal operations in Manitouwadge has resulted in the formation of a chemocline in Mose Lake which has not allowed natural destratification.

The improved operations of Noranda (GECO) Mines and the closure of Wilroy Mines are not expected to result in restoration of natural lake conditions.

*Although action is not under way, potential remedial measures are being considered.

2BA	In	2, 13, 6, 5	c, e, i, g, h	5, 4, 6	b, d
1. Lake Superior Peninsula Harbour	STP	2, 13, 6			b, d

Comments: - American Can Co. of Canada Ltd. at Marathon is not meeting the BOD and suspended solids requirements of the MOE. A new Control Order issued in 1980 requires an abatement program to reduce BOD loadings and to ensure compliance with suspended solids and toxicity requirements by 1984. In general, existing water supplies and recreational uses are not adversely impacted.

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2BA (cont'd)					
2. Lake Superior Jackfish Bay	In	13, 2, 6, 1, 9	c, e, i, g, h, a	5, 4	b, d

Comments: - Kimberley Clark of Canada Ltd. has not been able to meet effluent requirements since the start-up of the new mill. A new Control Order will be served later this year when the company resumes production following the fire in the autumn of 1981 which resulted in the shut-down of all mill operations. The new Control Order will be aimed at ensuring compliance with suspended solids, BOD and toxicity requirements.

2AD Nipigon River	No data available				

2AC, 2AE					
23 Lake Superior Tributaries	In	3, 13, 6, 1	a, c, i, e, h	5, 4	b, d
1. Nipigon Bay					

Comments: - Effluent from Domtar Packaging is in compliance with the suspended solids and BOD requirements of the MOE but exceeds the fish toxicity requirement. The plant is currently undergoing modernization and will improve wastewater treatment to meet toxicity requirements by 1982. The company is expected to meet the requirements of a current Control Order by 1984.

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2AC					
2. Thunder Bay	In	1, 2, 13, 6, 5	a, c, i, e, g, h	5, 4	b, d
	Ur	2, 6		3, some areas	b, d
	STP	2, 4, 1		6, Kam River	b, d
Comments: - At present, some industrial effluents are not meeting MOE requirements. However, improvements in plant operations and pollution abatement facilities should lead to a general decrease in industrial loadings of BOD and suspended solids into the bay. The completion of phosphorus removal facilities at the Thunder Bay Wastewater Treatment Plant should also result in improved removal efficiencies for BOD and suspended solids.					
2AB Kaministiquia River Five Lake Superior Tributaries	In	1, 2	a, g, e	1, 4, 5	b, d
Comments: - BOD continues to be the single most critical problem in the Kaministiquia River and its Delta owing to its limited assimilative capacity. Staged reduction in BOD loadings from Great Lakes Forest Products is not expected to be lower BOD sufficiently to ensure adequate and continuous oxygen supplies required by the fish community. From January, 1983 a primary and secondary treatment plant is in operation by Industrial Grain Products to reduce its BOD loadings.					
2AA Eight Lake Superior Tributaries	No data available				

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
NELSON RIVER SYSTEM					
5PA - 5PB Upper Rainy River	No data available				
5PC Lower Rainy River (Fort Frances Area)	In	2, 4, 6	g, c, b	5, 3	b, d
	Ag	4	b	7 (contribute to above)	
	STP	4	b	7 (" ")	
Comments: - Algae growth in Four Mile Bay, Lake of the Woods are related to non-point sources. - Bacteriological levels in Rainy River are very high and, are caused by pulp and paper industrial discharges. Investigations are ongoing to determine possible health risks. - Abatement measures at Boise Cascade, Fort Frances have resulted in improved effluent toxicity and BOD_5 loadings. Apparent improvement in water quality noted in 1982.					
5PD Lake of the Woods and Drainage	No data available				
5PE Winnipeg River (from Lake of the Woods to the Manitoba border)	In	1, 2, 9, 6, 2	h, g	5	b, d
	STP	6, 1, 2	c	3	a, d
Comments: - Owing to the substantial assimilative capacity of the Winnipeg River, current effects resulting from high bacterial populations and BOD on water quality are localized. A significant reduction in suspended solids loading from the Boise Cascade pulp and paper operation is resulting in improved conditions. A Control Order requires the company to further reduce discharges.					

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
5Qa - 5QB Upper English River & Lac Seul Drainage	No data available				
5QC Pakwash River	In	5, 12	g, h	4, 5	b, d

Comments: - Data not available for the whole watershed.

Balmer Creek: Dickenson Gold Mines and Campbell Red Lake Gold Mines have discharged tailings and effluents directly to Balmer Lake for some time. MOE has begun work on a Control Order, the intent of which will be to ensure water quality objectives will be met in Balmer Creek.

5QD Wabigoon River	In	5, 12, 6	i, a, e	5, 2	b, c

Comments: - Historical deposits of mercury in the Wabigoon River continue to influence the management of the fisheries resource in the English River System. A Federal-Provincial study, due to be completed in 1983, will address potential remedial measures.

- Because of the low assimilation capacity of the Wabigoon River, current BOD loading and sediment oxygen demand result in anoxic conditions in large stretches of the river system above Clay Lake.
- Great Lakes Forest Products will be operating a traditional secondary treatment system by the end of 1982.

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
5QE Lower English River	No data available				
5R Lake Winnipeg Tributaries	No data available				
HUDSON BAY - JAMES BAY SYSTEM					
4A Hayes River 4B Hudson Bay Tributaries between Nelson and Severn Rivers 4C Severn River 4D Winisk River and Hudson Bay Tributaries 4E Hudson and James Bays Tributaries between Winisk and Attawapiskat Rivers		No data available			

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
4F Attawapiskat River 4G Upper Albany River 4H Lower Albany River and James Bay Tributaries between Attawapiskat and Moose Rivers 4J Upper Missinaibi River 4K Kwataboahegan River 4LA Upper Mattagami River		No data available			
4LB Middle Mattagami River	In	1, 2, 9	a, g, e	5, 4	b, d

Comments: - Abitibi-Price Pulp Mill at Smooth Rock Falls is the major source affecting the Mattagami River for 20-30 miles downstream. A Control Order is in place and should resolve some of the problems if compelted satisfactorily.

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
4LC - 4LE Groundhog River and Upper Kapuskasing River	No data available				
4LF Lower Kapuskasing River	In O (Logdrive & Storage)	1, 2, 9 1, 2, 9	a, e, g a, e, g	5, 4, 6 5, 4, 6	b, d b, d, c
Comments: - The Kapuskasing River has serious problems for more than 40 miles downstream of the Spruce Falls Power and Paper Company mill. A Control Order is in place which may solve some of the problems. - The river is seriously affected by log driving practises and further work is required with Spruce Falls Power and Paper and MNR to define and resolve these problems. Aesthetics are affected by bark and fibre deposits.					
4LG - 4LM Missinaibi River	No data available				
4MA Upper Abitibi River	In	5	i	3	b
Comments: - Limited consumption of fish flesh in some areas due to abandoned gold mines in Quebec. Work is required by either Quebec or Federal Government (not in Ontario jurisdiction).					
4MB Black River	No data available				

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
4MC Middle Abitibi River	In	1, 2	a, g, e	5, 4	d
Comments: - Abitibi River is adversely affected for about 30 miles downstream of Abitibi-Price pulp mill at Iroquois Falls. A Control Order is in place and, if completed satisfactorily, should resolve most of the problem.					
4MD Fredrick House River	In	5	-	-	-
4ME Lower Abitibi River 4MF French River 4NB Upper Rivere Turgeon 4NC Seven James Bay Tributaries	No data available				

The chart below summarizes the number and percentage of Ontario watersheds affected by different pollution sources. As noted in the previous pages, individual watersheds may be affected by more than one main pollution source.

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Forecast
No. of watersheds affected by agricultural runoff	N/A	N/A	N/A	33 (22.9%)	33 (22.9%)
No. of watersheds affected by direct industrial discharges	N/A	N/A	N/A	48 (33.3%)	46 (31.9%)
No. of watersheds affected by urban runoff/stormwater discharges	N/A	N/A	N/A	24 (16.7%)	22 (15.3%)
No. of watersheds affected by STP discharges	N/A	N/A	N/A	43 (29.9%)	40 (27.8%)
No. of watersheds affected by the use of private sewage systems	N/A	N/A	N/A	8 (5.6%)	8 (5.6%)
No. of watersheds affected by atmospheric deposition	N/A	N/A	N/A	15 (10.4%)	15 (10.4%)
No. of watersheds with specific non-Ontario sources causing transboundary water pollution	N/A	N/A	N/A	6 (4.2%)	6 (4.2%)

The indicators identified in the following bar charts, and their respective Provincial Water Quality objectives are:

DO	- Dissolved Oxygen	- Objective: See Table, p.33, Water Management, M.O.E., 1978
TP	- Total Phosphorus	- Objective: 0.030 mg/l
FC	- Fecal Coliforms	- Objective: 100/100 ml
NH_3	- Un-ionized Ammonia	- Objective: 0.02 mg/l
FE	- Iron	- Objective: 0.3 mg/l
PHE	- Phenols	- Objective: 1 ug/l

For each indicator, six patterns are used to represent criteria exceedences:

represents 0% exceedence: the objective was not exceeded in any samples for the stated percentage of stations.

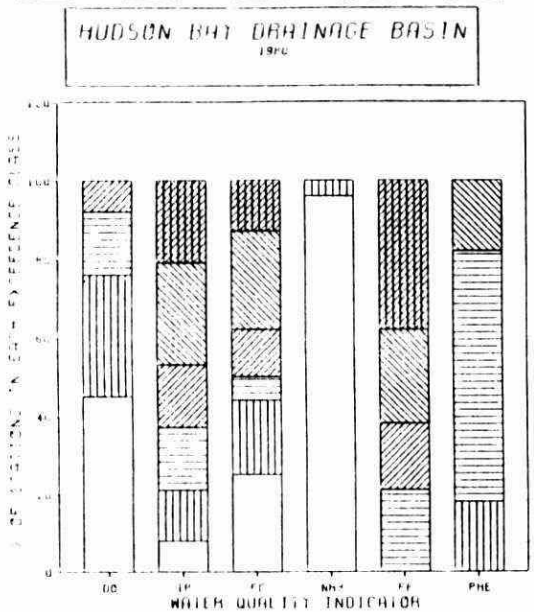
represents 1-24% exceedence: the objective was exceeded for 1% to 24% of the samples for the stated percentage of stations.

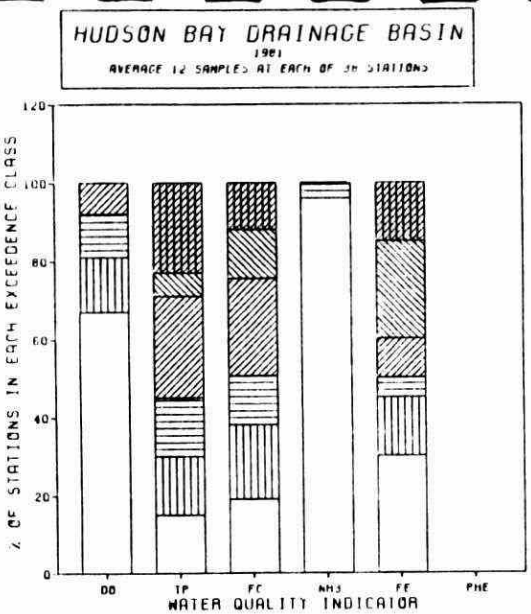
represents 25-49% exceedence: the objective was exceeded for 25% to 49% of the samples for the stated percentage of stations.

represents 50-74% exceedence: the objective was exceeded for 50% to 74% of the samples for the stated percentage of stations.

represents 75-99% exceedence: the objective was exceeded for 75% to 99% of the samples for the stated percentage of stations.

represents 100% exceedence: the objective was exceeded in all samples for the stated percentage of stations.





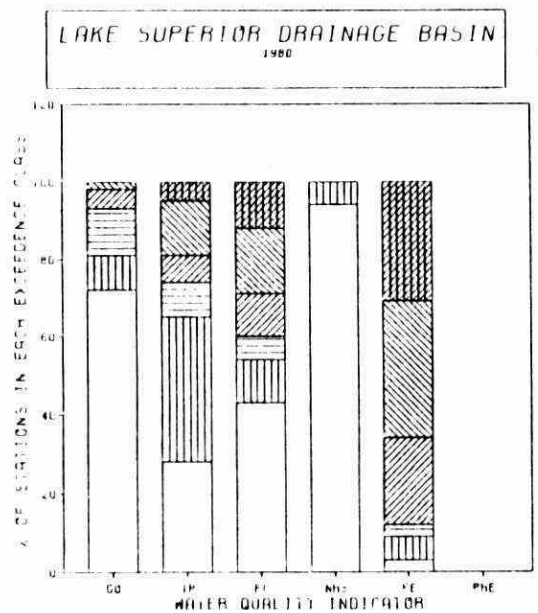
Historical Trends:

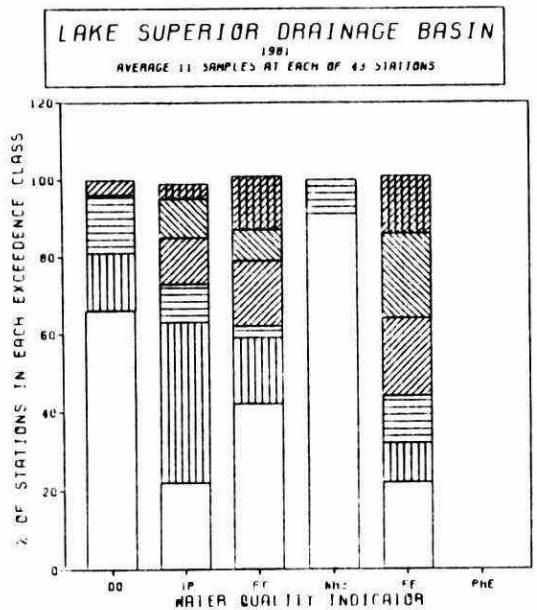
Stations with Improving Trends	0
Stations with No Trends	1
Stations with Deteriorating Trends	0

Recent Changes:

Improvement in dissolved oxygen.

No other significant changes.





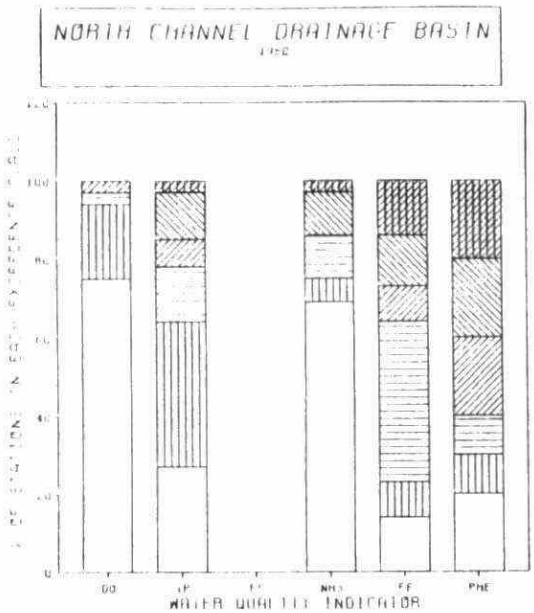
Historical Trends:

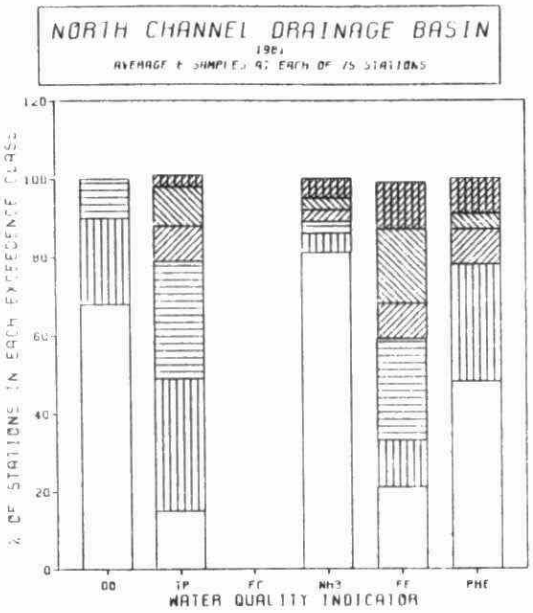
Stations with Improving Trends	1
Stations with No Trends	1
Stations with Deteriorating Trends	0

Recent Changes:

Improvement in dissolved oxygen.

No other significant change.





Historical Trends:

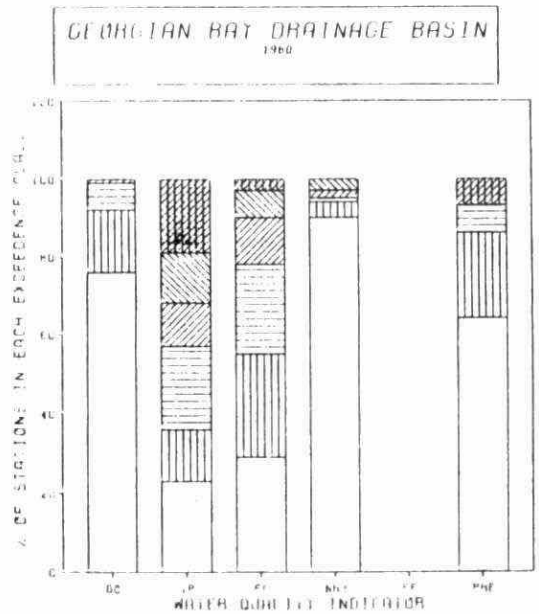
Stations with Improving Trends 0

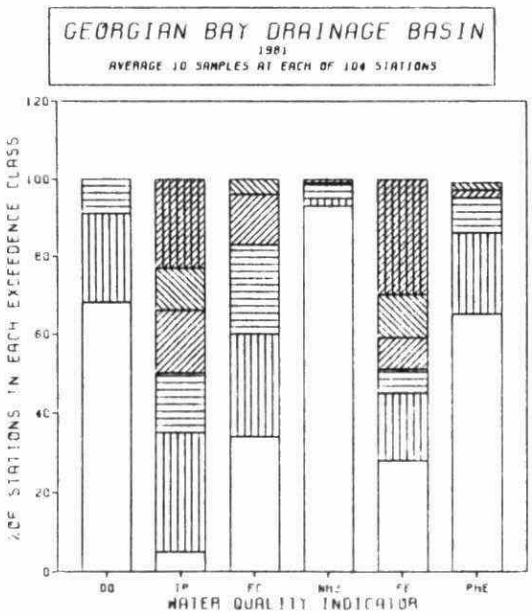
Stations with No Trends 1

Stations with Deteriorating Trends 0

Recent Changes:

No significant changes.





Historical Trends:

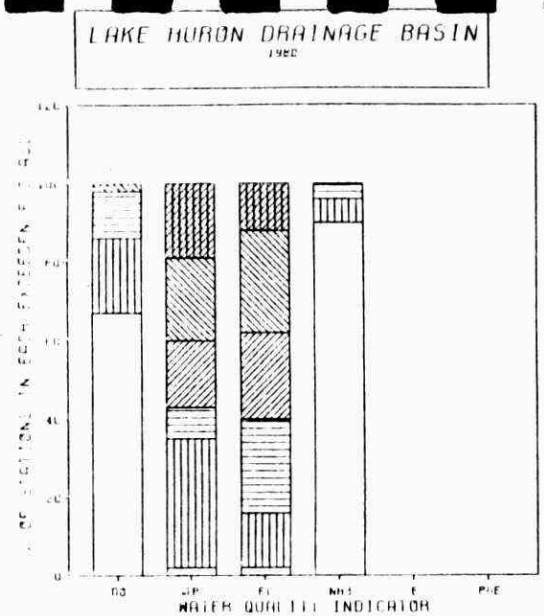
Stations with Improving Trends 6

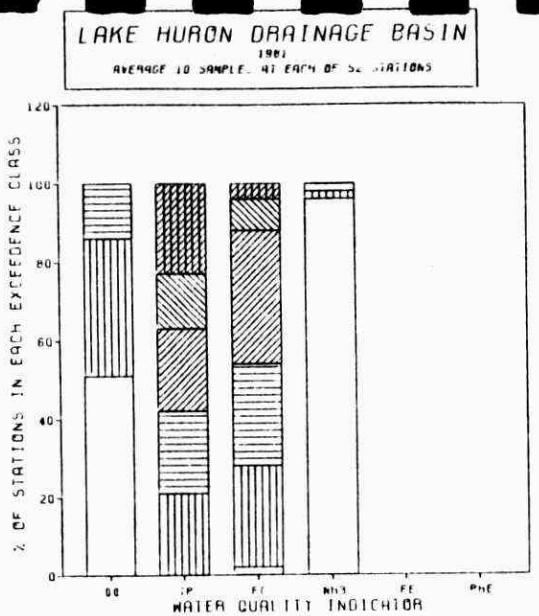
Stations with No Trends 25

Stations with Deteriorating Trends 0

Recent Changes:

No significant changes.





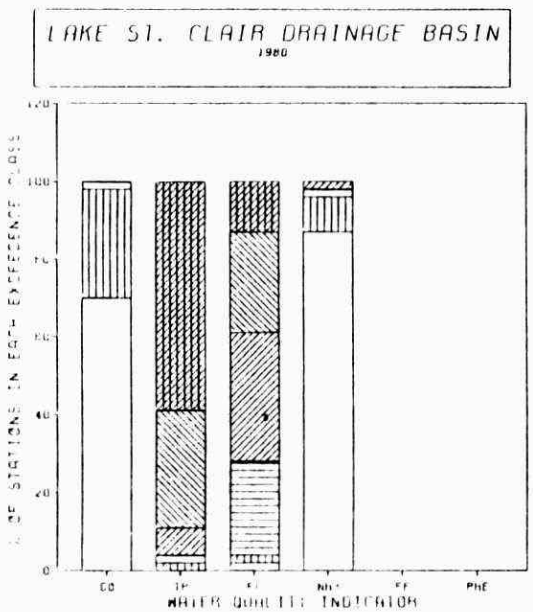
Historical Trends:

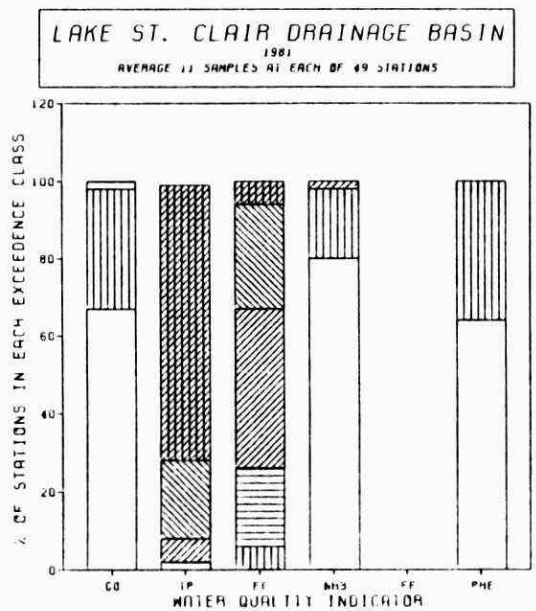
Stations with Improving Trends	6
Stations with No Trends	12
Stations with Deteriorating Trends	2

Recent Changes:

Slight reduction in dissolved oxygen.

No other significant changes.



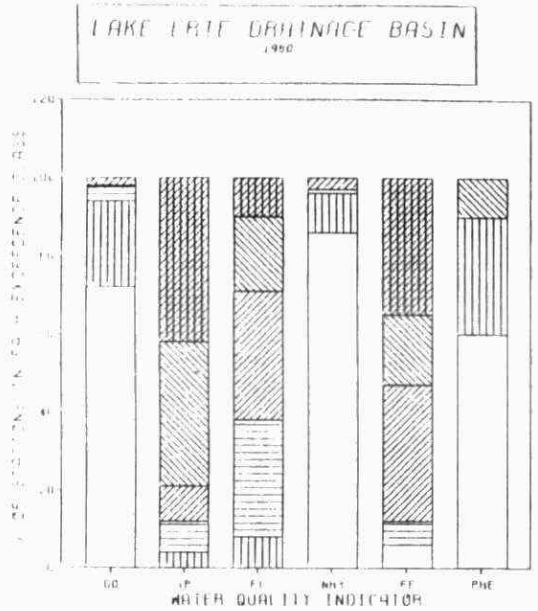


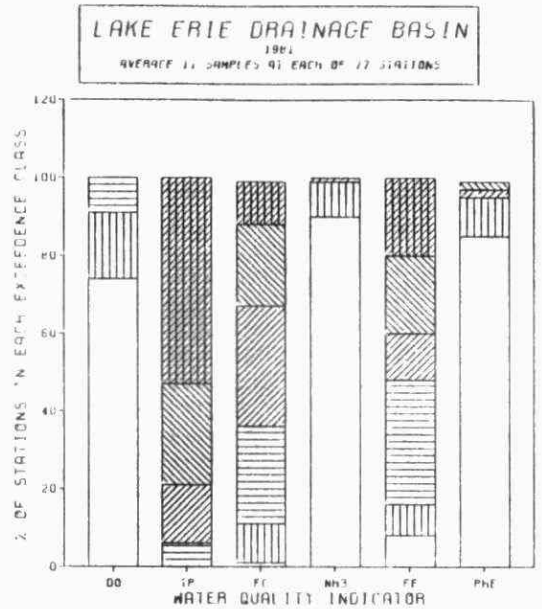
Historical Trends:

Stations with Improving Trends	1
Stations with No Trends	2
Stations with Deteriorating Trends	0

Recent Changes:

No significant changes.





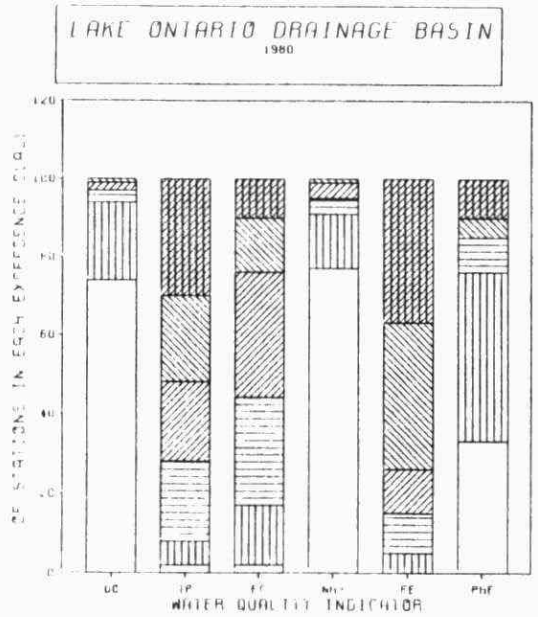
Historical Trends:

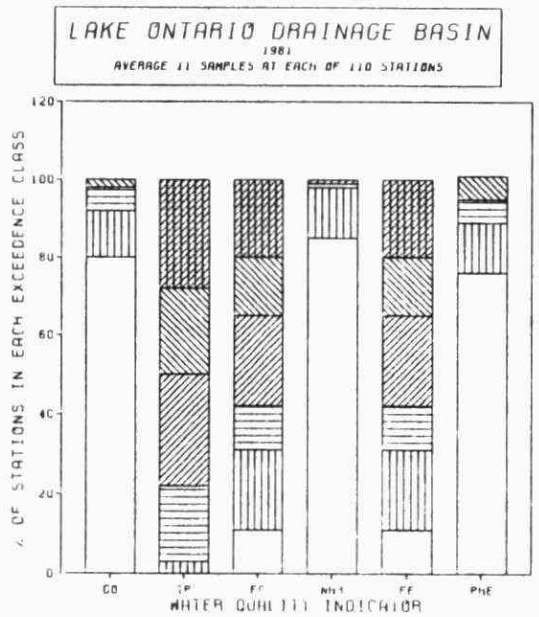
Stations with Improving Trends	16
Stations with No Trends	14
Stations with Deteriorating Trends	1

Recent Changes:

Slight reduction in phenols concentrations.

No other significant changes.



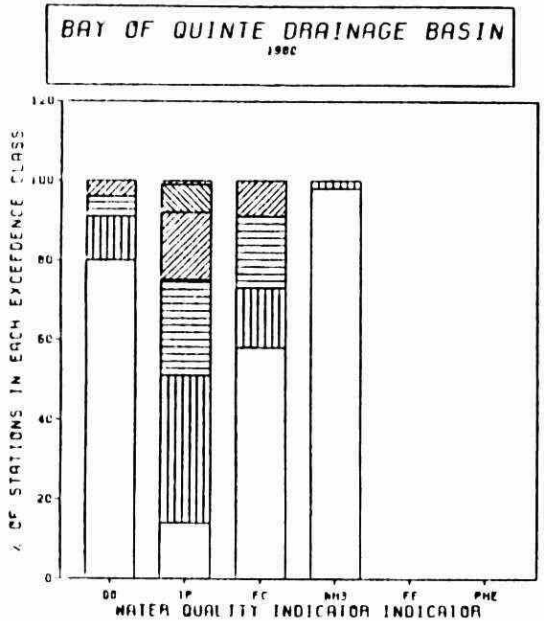


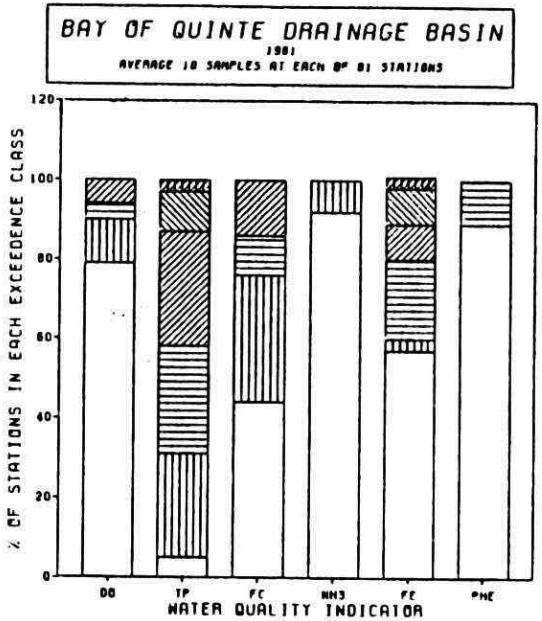
Historical Trends:

Stations with Improving Trends	27
Stations with No Trends	10
Stations with Deteriorating Trends	4

Recent Changes:

No significant changes.



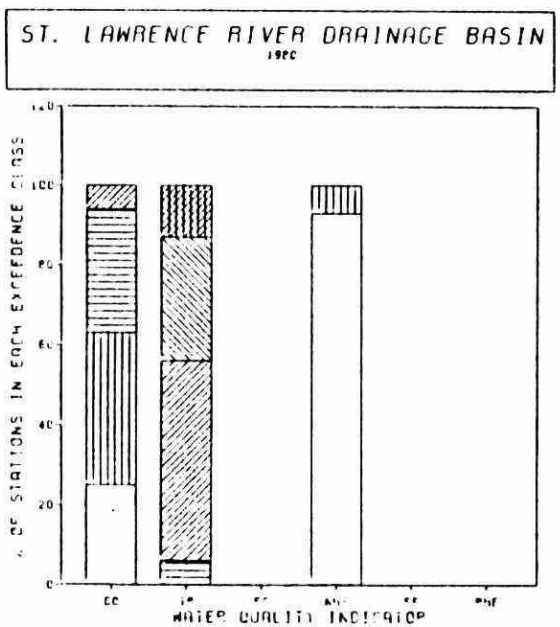


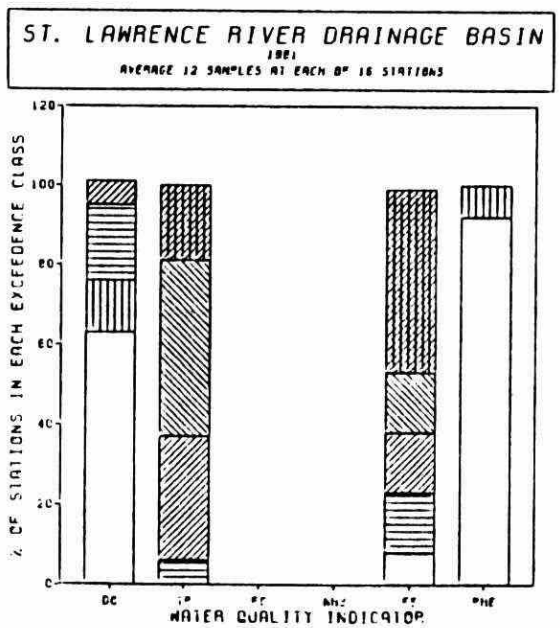
Historical Trends:

Stations with Improving Trends	7
Stations with No Trends	2
Stations with Deteriorating Trends	0

Recent Changes:

No significant changes.





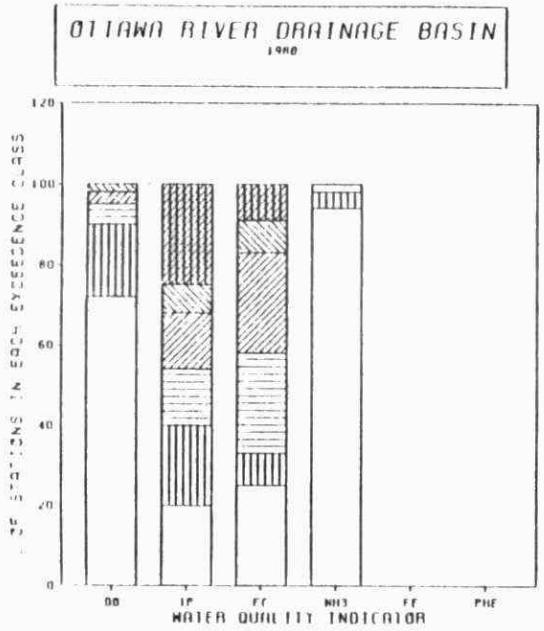
Historical Trends:

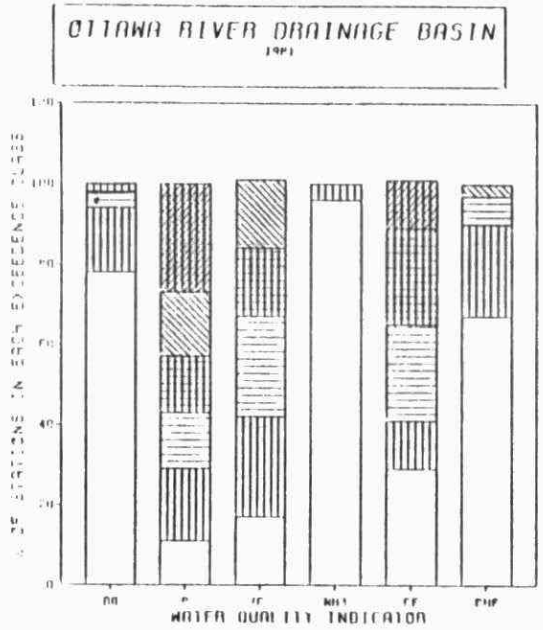
Stations with Improving Trends	0
Stations with No Trends	9
Stations with Deteriorating Trends	0

Recent Changes:

Improvement in dissolved oxygen.

No other significant changes.





Historical Trends:

Stations with Improving Trends	1
Stations with No Trends	0
Stations with Deteriorating Trends	0

Recent Changes:

No significant changes.

General improvement is evident in long-term water quality trends. However, a number of water quality criteria exceedences continue. In the short term, few measurable improvements in water quality are foreseen. The majority of Ontario point sources of pollution are complying with Ministry objectives and little impact will be made on non-point sources in the near future.

Within the Great Lakes, no substantial new efforts by the United States to control water pollution are expected.

CORPORATE MBR PROJECT ON AIR QUALITY

OBJECTIVE

To ensure an ambient air quality in Ontario that will have no detrimental effects on human health, or on the natural environment.

This corporate MBR project summarizes certain information concerning air quality from:

(i) the MBR Project on the Management of Point Sources of Air and Water Pollution, and

(ii) the MBR Project on the Management of Non-Point Sources and Transboundary Pollution.

DESCRIPTION

The air quality at all locations in Ontario with long-term sampling stations is given in the tables on pages 193 to 236.

The following items explain the column headings used in the tables.

Column 1 Classification of Station Locations

The location of each monitoring station has been classified as being source oriented, commercial, residential, urban or rural (of a combination of these).

Column 3 The Annual Criteria, 1-Month Criteria, 8-Hour Criteria and 1-Hour Criteria are also given on the following page.

Column 4. % Data Above Criterion

In addition to the numerical percentages, these columns record the actual number of exceedences (x) and the total number of sampling periods (y) in the format (x/y). All the data is for the 1981 calendar year.

AIR QUALITY CRITERIA TABLE

	Annual	1-Month	24-Hour	8-Hour	1-Hour
Sulphur Dioxide	0.02 ppm		0.10 ppm		0.25 ppm
Nitrogen Dioxide			0.10 ppm		0.20 ppm
Carbon Monoxide				13 ppm	30 ppm
Soiling Index	0.5 COH/1000 FT		1.0 COH/1000 FT		
Ozone					0.08 ppm
Dustfall	4.5 g/m^2/30 days	7.0 g/m^2/30 days			
Total Reduced Sulphur					27 ppb
Lead in Suspended Particulate Matter			5.0 ug/m^3		
Total Suspended Particulate Matter	60 ug/m^3 (geometric mean)		120 ug/m^3		

5. Major Sources of Pollution

The major factors influencing data values at each station are provided in this column. The interpretation for each code number is as follows:

1 ... Generating Station
2 ... Iron and Steel
3 ... Non-Ferrous Metals
4 ... Forest Products, Pulp and Paper
5 ... Petrochemical
6 ... Non-Metalic Mineral Production (cement, quarries, etc.)
7 ... Grain Elevators
8 ... Miscellaneous Manufacturing
9 ... Other Industrial Sources
10 ... Space Heating
11 ... Incineration
12 ... Agriculture
13 ... Fugitive Sources
14 ... Photochemical Reactions in the Atmosphere
15 ... Natural
16 ... General Urban
17 ... Construction
18 ... Unknown
19 ... Transportation
20 ... Long Range Transport

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
ATIKOKAN												
Total Suspended Particulate Matter	Commercial	1	26	0		1.8 (1) (55)			1	No significant change from 1981	No significant change from 1981	No significant change from 1982
AYR												
Dustfall	Source Oriented	1	15.2	1	91 (10) (11)				2	No significant change from 1981	No significant change from 1981	No significant change from 1982
BARRIE												
Sulphur Dioxide	Commercial/ Residential	1	.....	.....no 1981	Information	.....	.		8, 10, 20	New Station Installed Jan. 1983	No data available	No significant change from 1982
Total Supsended Particulate Matter	Commercial/ Residential	1	36	0		0			8, 7, 19	New Station Installed Jan. 1982	No data available	No significant change from 1982
BALMERTOWN												
Sulphur Dioxide	Source Oriented	1	.013	0		2.1 (6) (280)		1.2 (83) (7042)	3	No significant change from 1981	Significant Improvement over 1981	No significant change from 1982

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
BEACHVILLE												
Total Suspended Particulate Matter	Rural/ Industrial	1	84	1		22.8 (13)/(57)			6, 19	No significant change from 1981	No significant change from 1981	No significant change from 1982
BELLEVILLE												
Total Suspended Particulate Matter	Urban	1	53	0		3.4 (1)/(29)			7	No significant change from 1981	No significant change from 1981	No significant change from 1982
Lead In Suspended Particulate Matter	Urban	1	.2			0 (0)/(10)			19	No significant change from 1981	No significant change from 1981	No significant change from 1982
BRAMALEA												
Total Suspended Particulate Matter	Residential	1	53	0		3.6 (2)/(55)			8, 7, 19	No significant change from 1981	No significant change from 1981	No significant change from 1982

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
BRANTFORD												
Dustfall	Source Oriented (Bell City)	1	5.9	1	25 (3)/(12)				2	No significant change from 1981	No significant change from 1981	No significant change from 1982
	Source Oriented (Massey Ferguson)	2	7.3-10.2	2	37.5 (9)/(24)				2	No significant change from 1981	Significant Improvement over 1981	No significant change from 1982
	Source Oriented (Snowdon)	1	4.3	0	0 (0)/(11)				2	No significant change	No significant change	No significant change from
BROCKVILLLE												
Total Suspended Particulate Matter	Urban	1	30	0		0 (0)/(28)			7	No significant change from 1981	No significant change from 1981	No significant change from 1982
Lead In Suspended Particulate Matter	Urban	1	.2			0 (0)/(3)			19	No significant change	No significant change	No significant change from

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
BRUCE TWP.												
Sulphur Dioxide	Rural	1	.003	0		0 (0)/(341)		0 (0)/(8149)	1	No significant change from 1981	No significant change from 1981	No significant change from 1982
Total Reduced Sulphur	Rural	1	.2					N/A	1	No significant change from 1981	No significant change from 1981	No significant change from 1982
Ozone	Rural (Snowdon)	1	.029					1.7 (139)/(8298)	14, 20	No significant change from 1981	Significant improvement over 1981	No significant change from 1982
BURLINGTON												
Sulphur Dioxide	Residential	1	.007	0		0 (0)/(325)		0 (0)/(7855)	2, 5, 8, 10, 20		No significant change from 1981	No significant change from 1982
Ozone	Residential	1	.016					.01 (1)/(8032)	5, 20		No significant change from 1981	No significant change from 1982
Total Suspended Particulate Matter	Residential	1	45	0		2.6 (3)/(117)			8, 7, 19		No significant change from 1981	No significant change from 1982

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
CHATHAM												
Total Suspended Particulate Matter	Commercial	1	65	1		9.0 (4) (45)			8, 16, 19	No significant change from 1981	No significant change from 1981	No significant change from 1982
CHIPPEWA												
Total Suspended Particulate Matter	Source Oriented	2	65 - 96	2		25.2 (26) (103)			8	No significant change from 1981	Significant Improvement over 1981	No significant change from 1982
Sulphur Dioxide	Source Oriented	1	.029	1		1.0 (3) (286)		.03 (2) (6911)	8	No significant change from 1981	Significant Improvement over 1981	Significant Improvement
Total Reduced Sulphur	Source Oriented	1	12.2					N/A (N/A) (6806)	8	No significant change from 1981	Significant Improvement over 1981	Significant Improvement
Dustfall	Source Oriented (Norton, all of above)	2	3.7 - 8.8	1	33.3 (8) (24)				8	No significant change from 1981	No significant change from 1981	No significant change from 1982

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
CORNWALL												
Sulphur Dioxide	Residential	1	.010	0		0 (0)/(365)		.01 (1)/(7095)	4	No significant change from 1981	No significant change from 1981	No significant change from 1982
Nitrogen Dioxide	Residential	1	.011			0 (0)/(361)		0 (0)/(7373)	19, 20	No significant change from 1981	No significant change from 1981	No significant change from 1982
Ozone	Residential	1	.022					.2 (15)/(7329)	4	No significant change from 1981	No significant change from 1981	No significant change from 1982
Total Reduced Sulphur	Source Oriented	1	3.1					1.4 (106)/(7656)	4	No significant change from 1981	No significant change from 1981	No significant change from 1982
Total Reduced Sulphur	Residential	1	1.8					.6 (34)/(5871)	4	No significant change from 1981	Possible deterioration over 1981	Expected to deteriorate over 1982
Total Suspended Particulate Matter	Residential	1	42	0		0 (0)/(28)			7	No significant change from 1981	No significant change from 1981	No significant change from 1982
Total Suspended Particulate Matter	Commercial	1	49	0		0 (0)/(28)			7	No significant change from 1981	No significant change from 1981	No significant change from 1982

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
CORNWALL												
Lead In Suspended Particulate Matter	Residential	1	2.0			0 (0)/(38)			19	No significant change from 1981	No significant change from 1981	No significant change from 1982
Soiling Index	Residential	1	.10	0		0 (0)/(365)			19	No significant change from 1981	No significant change from 1981	No significant change from 1982
Carbon Monoxide	Residential	1	1.1				0 (0)/(1059)	.01 (1)/(7442)	19	No significant change from 1981	No significant change from 1981	No significant change from 1982
DRYDEN												
Dustfall	Source Oriented	2	4.4 - 5.6	1	25.0 (6)/(24)					No significant change from 1981	No significant change from 1981	No significant change from 1982
Total Reduced Sulphur	Source Oriented	1	5.5					5.9 (405)/(6826)	4	No significant change from 1981	No significant change from 1981	Significant Improvement (new craft mill early 1983)

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
ELLIOT LAKE												
Lead In Suspended Particulate Matter	Industrial/ Residential	6	18 - 46			2.9 (4) (139)			3, 10	No significant change from 1981	No significant change from 1981	No significant change from 1982
Dustfall	Industrial/ Residential/ Rural	11	1.6 - 5.5	N/A	13.6 (16) (118)					No significant change from 1981	No significant change from 1981	No significant change from 1982
ESPANOLA												
Total Suspended Particulate Matter	Industrial/ Residential	1	61	1		12.1 (4) (33)			4, 10	No signinficant change from 1981	No significant change from 1981	No significant change from 1982
Dustfall	Industrial	1	9.8	1	63.6 (7) (11)					" "	" "	" "
ETOBICOKE												
Sulphur Dioxide	Residential	2	0.006 - 0.012	0		0 (0) (625)		0 (0) (14929)	1, 8, 10, 20		No significant change from 1981	No significant change from 1982
	Industrial	2	0.005 - 0.008	0		0 (0) (626)		0 (0) (15029)	1, 8, 10, 20		No significant change from 1981	No significant change from 1982

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
ETOBICOKE (cont'd)												
Nitrogen Dioxide	Residential	1	0.022			0 (0) (314)		0 (0) (7367)	5, 19, 20		No significant change from 1981	No significant change from 1982
	Industrial	1	0.036			0 (0) (356)		0 (0) (8321)	5, 19, 20		No significant change from 1981	No significant change from 1982
Carbon Monoxide	Residential	1	1.0				0 (0) (894)	0 (0) (7149)	19		No significant change from 1981	No significant change from 1982
	Industrial	1	2.1				0 (0) (1049)	0 (0) (8388)	19		No significant change from 1981	No significant change from from 1982
Soiling Index	Residential	2	0.22-0.28	0		0.2 (1) (549)			8, 7, 19, 20		No significant change from 1981	No significant change from from 1982
	Industrial	3	0.21-0.31	0		0.2 (2) (1071)			8, 7, 19, 20		No significant change from 1981	No significant change from 1982

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
ETOBICOKE (cont'd)												
Ozone	Residential	1	0.015					0.5 (39/7356)	5, 20		No significant change from 1981	No significant change from 1982
	Industrial	1	0.010					0.3 (26/8293)	5, 20		" "	" "
Lead in Suspended Particulate Matter	Residential	1	0.2		0 (0/12)				7. 19		" "	" "
	Industrial	2	0.4-1.1		0 (0/12)				3, 7, 19		" "	" "
Total Suspended Particulate Matter	Residential	3	50-54	0		2.2 (12/555)			8, 7, 19		" "	" "
	Industrial	3	55-91	2		11.4(62/546)			8, 7, 19		" "	" "
FORT ERIE												
Sulphur Dioxide	Rural	1	.010	0		0 (0/271)		0 (0/6697)	10, 20		" "	" "

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
FORT FRANCES												
Dustfall	Source Oriented	3	3.4-10.4	2	40.0 (14/35)				4, 13	No significant change from 1981	No significant change from 1981	No significant improvement over 1982
Total Reduced Sulphur	Source Oriented	2	3.1-12.0					7.6 (1008/13212)	4	No significant change from 1981	Significant improvement 1 monitor-no change other	No significant change from 1982
Total Suspended Particulate Matter	Source Oriented	2	39-74	1		19.0 (22/116)			4	" "	No significant change	" "
GODERICH												
Total Suspended Particulate Matter	Residential	1	45	0		3.6 (2/56)			7, 17	No significant change 1981	No significant change from 1981	No significant change from 1981
GREENSVILLE												
Dustfall	Source Oriented (Steetley's Quarry)	4	5.5-10.5	4	46.8 (22/48)				8	" "	" "	" "

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
GUELPH												
Total Suspended Particulate Matter	Commmercial	1	47	0		0 (0/56)			6, 7	No significant change from 1981	No significant change from 1981	No significant improvement over 1982
	Source Oriented	1	50	0		5.5 (3/54)			2	" "	" "	" "
Sulphur Dioxide	Commercial	1	.003	0		0 (0/312)		0 (0/7535)	10	" "	" "	" "
HAMILTON												
Sulphur Dioxide	Source Oriented	2	.010-014	0		0 (0/703)		0 (0/16544)	2, 8, 10	" "	" "	" "
Carbon Monoxide	Source Oriented	1	1.2				0 (0/1047)	0 (0/8372)	2, 19	" "	" "	" "
Nitrogen Dioxode	Source Oriented	2	.027-.029			0 (0/712)		.02 (3/16686)	2, 8, 10, 19	" "	" "	" "
Ozone	Source Oriented Industrial	1	.016					.3 (24/8503)	5, 20	" "	" "	" "

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
HAMILTON (cont'd)												
Soiling Index	Source Oriented	2	58-72	2		14.1 (100/709)			2, 4, 6, 7, 8, 9	No significant change from 1981	No significant change from 1981	No significant change from 1982
Total Reduced Sulphur	Source Oriented	2	1.3-1.6					N/A(N/A/14751)	2	No significant change from 1981	No significant change from 1981	No significant change from 1982
Total Suspended Particulate Matter	Source Oriented	3	72-101	3		18.2 (129/708)			2, 6, 7, 8	" "	" "	" "
	Commercial	4	57-64	3		9.1 (20/219)			2, 6, 7, 8	" "	" "	" "
	Residential	4	55-64	2		7.0 (16/228)			2, 6, 7, 8	" "	Significant deterioration (weather effect)	" "
	Industrial	2	63-75	2		8.9 (10/112)			2, 6, 7, 8	" "	" "	" "

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
HAMILTON (cont'd)												
Lead In Suspended Particulate Matter	Source Oriented	3	.4-.6	no 1981 Infor	mation					No signifi-cant change from 1981	No signifi-cant change from 1981	No significant change from 1982
	Commercial	1	.4	" "	"					" "	" "	" "
	Residential	1	.3	" "	"					" "	" "	" "
	Industrial	2	.2-.3	" "	"					" "	" "	" "
HAWKESBURY												
Sulphur Dioxode	Source Oriented	1	.020	0		N/A (N/A) (203)		.6 (32) (5495)	4	" "	Significant Improvement over 1981 (source shutdown)	Significant Improvement
HEARST												
Dustfall	Industrial/ Residential	4	8.4-9.4	4	40.9 (18) (44)				4	" "	" "	Slight deterioration over 1982 (If operations resume)

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
KENORA												
Dustfall	Source Oriented	2	4.1-14.1	1	43.5 (10/23)				4	No significant change from 1981	Significant improvement from 1981	No significant change from 1982
KINGSTON												
Sulphur Dioxide	Urban	1	.000	0		N/A (N/A)		0 (0/6800)	10, 20	" "	No significant change from 1981	No significant change from 1982
Total Suspended Particulate Matter	Urban	1	45	0		0 (0/16)			7	" "	" "	" "
Lead In Suspended Particulate Matter	Urban	1	No data			0 (0/5)			19	" "	" "	" "
KITCHENER												
Sulphur Dioxide	Commercial	1	.003	0		0 (0/339)		0 (0/8341)	10	" "	" "	" "

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
KITCHENER (cont'd)												
Carbon Monoxide	Commercial	1	1.1				0 (0) (1026)	0 (0) (8207)	19	No significant change from 1981	No significant change from 1981	No significant change from 1982
Nitrogen Dioxide	Commercial	1	.026			.3 (1) (293)		.02 (2) (6965)	10, 19	" "	" "	" "
Ozone	Commercial	1	.019					.8 (68) (8204)	5, 20	" "	" "	" "
Total Suspended Particulate Matter	Commercial	1	64	1		9.3 (5) (54)			4, 7, 9	" "	No significant improvement (weather effect)	" "
Lead In Suspended Particulate Matter	Urban	1	.8			0 (0) (54)			19	" "	No significant change from 1981	Slight improvement over 1982
KAPUSKASING												
Dustfall	Industrial/ Residential	4	5.6-10.7	4	26.2 (11) (42)				4	" "	" "	" "

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
LONDON												
Sulphur Dioxide	Commercial	1	.009	0		0 (0/355)		0 (0/8313)	10	No significant change from 1981	No significant change from 1981	No significant change from 1982
Nitrogen Dioxide	Commercial	1	.02			0 (0/352)		0 (0/8390)	16, 19, 20	" "	" "	" "
Carbon Monoxide	Commercial	1	.4				0 (0/1048)	0 (0/8383)	16, 19	" "	" "	" "
Soiling Index	Commercial	1	.30	0		0 (0/341)			8, 16, 19	" "	" "	" "
Ozone	Commercial	1	.020					.9 (67/8343)	5, 19, 20	" "	Significant improvement over 1981	" "
Total Suspended Particulate Matter	Commercial	2	42-58	0		7.3 (8/109)			8, 16, 19	" "	No significant change from 1981	" "
Lead In Suspended Particulate Matter	Urban	2	.2-.3			0 (0/109)			19	" "	" "	" "

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
LITTLE CURRENT												
Dustfall	Rural/ Industrial	2	N/A	N/A	16.7 (2/12)				4	No significant change from 1981	Significant improvement over 1981 (source shutdown)	Deterioration over 1982 if operation resumes
MARATHON												
Total Reduced Sulphur	Commercial	1	N/A						4	New Station December 82	N/A	N/A
MISSISSAUGA												
Sulphur Dioxide	Residential	2	0.006	0		0 (0/676)		0.02(3/16329)	1, 5, 8, 10, 20	No significant change from 1981	No significant change from 1981	No significant change from 1982
Soiling Index	Residential	3	0.21-0.30	0		0 (0/1052)				" "	" "	" "
Nitrogen Dioxide	Residential	1	0.029			0 (0/351)		0 (0/8411)	5, 19, 20	" "	" "	" "

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
MISSISSAUGA (cont'd)												
Carbon Monoxide	Residential	1	2.4				0 (0) (1076)	0 (0) (8607)	19	No significant change from 1981	No significant change from 1981	No significant change from 1982
Ozone	Residential	1	0.014					.3 (21) (7765)	5, 20	" "	" "	" "
Lead in Suspended Particulate Matter	Residential	2	0.4-0.5		0 (0) (24)				7, 19	" "	" "	" "
	Industrial	3	0.8-2.1		27.8 (10) (36)				3, 7, 19	" "	" "	" "
Total Suspended Particulate Matter	Residential	2	73-81	2		16.0 (27) (169)			7, 8, 19	" "	" "	" "
	Industrial	3	62-72	3		8.6 (88) (1018)			3, 7, 8, 19	" "	" "	" "
MOORE TWP.												
Sulphur Dioxide	Rural/ Industrial	2	.003-.005	0		0 (0) (703)		0 (0) (16805)	1, 5	" "	" "	" "

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
MOORE TWP. (cont'd)												
Total Suspended Particulate Matter	Rural	3	32-43	0		1.2 (3/243)			12, 19	No significant change from 1981	No significant change from 1981	No significant change from 1982
	Residential	1	47	0		1.8 (1/56)			16, 19	" "	" "	" "
NANTICOKE AREA												
Total Suspended Particulate Matter	Rural/ Industrial	5	37-43	0		3.2 (9/281)			1, 2, 3, 5, 6, 9	" "	" "	" "
NIAGARA FALLS												
Soiling Index	Commercial	1	.25	0		0 (0/365)			7	" "	" "	" "
Sulphur Dioxide	Commercial	1	.004	0		0 (0/365)		0 (0/8538)	7	" "	" "	" "

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
NIAGARA FALLS (cont'd)												
Total Suspended Particulate Matter	Commercial	1	60	0		8.6 (5) (58)			8, 19	No significant change from 1981	No significant change from 1981	No significant change from 1982
	Industrial	1	79	1		26.0 (13) (50)			8	New	" "	" "
NORTH BAY												
Sulphur Dioxide	Residential	1	0.002	0		0 (0) (N/A)		0 (0) (N/A)	10	No significant change from 1981	" "	" "
Total Suspended Particulate Matter	Residential	1	38	0		0 (0) (13)			10, 19	" "	" "	" "
Lead In Suspended Particulate Matter	Commercial/ Residential	1	0.1			0 (0) (39)			19	" "	" "	
Dustfall	Commercial/ Residential	1	2.6	0	0 (0) (9)				19	" "	" "	" "

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
NORTH YORK												
Sulphur Dioxide	Residential	2	0.010-0.011	0		0 (0/683)		.01 (2/16232)	1, 8, 10, 20	No significant change from 1981	No significant change from 1981	No significant change from 1982
Nitrogen Dioxide	Residential	2	0.014-0.029			0 (0/661)		0 (0/15642)	5, 19, 20	" "	" "	" "
Carbon Monoxide	Residential	2	1.6-1.7				0 (0/2077)	0 (0/16621)	19	" "	" "	" "
Soiling Index	Residential	2	0.23-0.54	1		5.0 (36/721)			7, 8, 19, 20	" "	" "	" "
Ozone	Residential	1	0.016					0.7 (61/8141)	5, 20	" "	" "	" "
Lead in Suspended Particulate Matter	Residential	2	0.2-0.5		0 (0/15)				7, 19	" "	" "	" "
Total Suspended Particulate Matter	Residential	2	44-77	1		4.0 (6/151)			7, 8, 19	" "	" "	" "

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
OAKVILLE												
Sulphur Dioxide	Residential	1	0.005	0		0 (0 / 353)		0 (0 / 8227)	5, 8, 10, 20	No significant change from 1981	No significant change from 1981	No significant change from 1982
Soiling Index	Residential	1	0.36	0		1.2 (4 / 345)				" "	" "	" "
Nitrogen Dioxide	Residential	1	0.02			0 (0 / 355)		0 (0 / 8279)	5, 19, 20	" "	" "	" "
Carbon Monoxide	Residential	1	2.3				0 (0 / 964)	0 (0 / 7714)	19	" "	" "	" "
Ozone	Residential	1	0.017					0.5 (44 / 8578)	5, 20	" "	" "	" "
Lead In Suspended Particulate Matter	Residential	1	0.2		0 (0 / 12)				7, 19	" "	" "	" "
Total Suspended Particulate Matter	Residential	1	56	0		1.8 (2 / 112)			7	" "	" "	" "
Total Reduced Sulphur	Residential	1	0.6					.08 (7 / 8373)	5, 8	" "	" "	" "

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
ORILLIA												
Total Suspended Particulate Matter	Residential	1	50	0		2.1 (1/47)			7, 8, 19	No significant change from 1981	No significant change from 1981	No significant change from 1982
Soiling Index	Residential	.....No	1981 Infor	mation	.....							
OSHAWA												
Sulphur Dioxide	Residential	1	0.004	0		0 (0/332)		0 (0/7892)	8, 10, 20	" "	" "	" "
Nitrogen Dioxide	Residential	1	.019			0 (0/362)		0 (0/8449)	5, 19, 20	" "	" "	" "
Carbon Monoxide	Residential	1	2.0				0 (0/727)	0.01(1/8453)	19	" "	" "	" "
Soiling Index	Residential	1	0.31	0		0.8 (3/361)			7, 8, 19, 20	" "	" "	" "
Ozone	Residential	1	.017					.5 (37/7901)	5, 20	" "	" "	" "

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
OSHAWA (cont'd)												
Total Suspended Particulate Matter	Residential	2	53-54	0		1.8 (4/227)				No significant change from 1981	No significant change from 1981	No significant change from 1982
Lead in Suspended Particulate Matter	Residential	1	0.2		0 (0/12)				7, 19	" "	" "	" "
OTTAWA												
Sulphur Dioxode	Commercial	1	.005	0		0 (0/295)		0 (0/6947)	10, 20	" "	" "	" "
Nitrogen Dioxide	Commercial	1	.016			0 (0/315)		0 (0/7400)	19	" "	" "	" "
Ozone	Commercial	1	.019					.01 (0/7323)	5, 20	" "	" "	Possible deterioration over 1982
Total Suspended Particulate Matter	Commercial	2	37-42	0		0 (0/33)			7	" "	" "	No significant change from 1982

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
OTTAWA (cont'd)												
Lead In Total Particulate Matter	Commercial	1	.3			0 (0) (33)			19	No significant change from 1981	No significant change from 1981	No significant change from 1982
Soiling Index	Commercial	1	.18	0		0 (0) (365)			7	" "	" "	" "
Carbon Monoxide	Commercial	1	1.3				0 (0) (N/A)	0 (0) (7261)	19	" "	" "	" "
PETERBOROUGH												
Sulphur Dioxide	Commercial	1		0		0 (0) (304)		0 (0) (7355)		" "	" "	" "
Lead In Suspended Particulate Matter	Commercial	1	0.2		0 (0) (12)	0 (0) (70)			7, 19	" "	" "	" "
Total Suspended Particulate Matter	Commercial	1	43	0		0.9 (1) (111)			7, 8	" "	" "	" "

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
PICKERING Total Suspended Particulate Matter	Residential	6	32-50	0		2.2 (39/1798)			7	No significant change from 1981	No significant change from 1981	No significant change from 1982
PLYMPTON TOWN Ozone	Rural	1	.023					1.0 (85/8202)	14, 20	" "	Significant Improvement over 1981	" "
PORT COLBORNE Total Suspended Particulate Matter	Source Oriented	2	48-57	0		4.3 (5/116)			3	" "	" "	" "
PORT HOPE Total Suspended Particulate Matter	Residential	3	34-47	0		1.2 (4/335)			7, 8	" "	" "	" "

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
RALEIGH TWP.												
Ozone	Rural	1	.024					.9 (71/7894)	14, 20	No significant change from 1981	Significant improvement over 1981	No significant change from 1982
RED ROCK												
Dustfall	Source Oriented	1	9.2	1	66.7 (8/12)				4	" "	No significant change from 1981	Significant improvement over 1982 (new recovery furnace)
Total Reduced Sulphur	Source Oriented	1	7.4					7.8 (289/3706)	4	New Station July, 1981	" "	" "
ST. CATHARINES												
Sulphur Dioxide	Commercial	1	.007	0		0 (0/358)		0 (0/8415)	10	No significant change from 1981	" "	No significant change from 1982
Carbon Monoxide	Commercial	1	1.0				0 (0/684)	0 (0/5470)	19	" "	Significant improvement over 1981	" "

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
ST. CATHARINES (cont'd)												
Nitrogen Dioxide	Commercial	1	.022			0 (0/344)		.05 (4/8287)	10, 19	No significant change from 1981	No significant change from 1981	No significant change from 1982
Ozone	Commercial	1	.020					.6 (48/8329)	5, 20	" "	" "	" "
Dustfall	Source Oriented	1	8.1	1	66.7 (8/12)				2	Measurable improvement from 1981	" "	" "
Total Suspended Particulate Matter	Commercial	2	56-57	0		9.6 (11/114)			4, 7, 9	No significant change from 1981	Significant deterioration (weather effect)	" "
Lead in Suspended Particulate Matter	Commercial	1	.3			0 (0/58)			19	" "	No significant change from 1981	" "
Soiling Index	Commercial	1	.32	0		.3 (1/362)			7	" "	" "	" "

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
ST. MARYS												
Total Suspended Particulate Matter	Industrial/ Residential	1	49	0		5.1 (3/59)			6	No significant change from 1981	No significant change from 1981	No significant change from 1982
ST. THOMAS												
Total Suspended Particulate Matter	Industrial/ Residential	2	59-61	1		10.3 (11/107)			2	" "	" "	" "
SARNIA												
Sulphur Dioxide	Commercial/ Residential	2	.013-014	0		0 (0/726)		.1 (3/17156)	1, 5, 10	" "	" "	" "
Nitrogen Dioxide	Commercial/ Residential	1	.018			0 (0/352)		0 (0/8182)	1, 5, 16, 19, 20	" "	" "	" "
Carbon Monoxide	Commercial/ Residential	1	.2				0 (0/1035)	0 (0/8282)	16, 19	" "	" "	" "
Total Reduced Sulphur	Residential/ Commercial	1	.4					N/A (N/A/8526)	5	" "	" "	" "

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
SARNIA (cont'd)												
Soiling Index	Commercial	1	.28	0		.3 (1/364)			8, 16, 19	No significant change from 1981	No significant change from 1981	No significant change from 1982
Ozone	Commercial	1	.021					.8 (67/8505)	14, 20	" "	" "	" "
Total Suspended Particulate Matter	Commercial/ Residential	5	44-62	1		4.1 (9/221)			8, 16, 19	" "	" "	" "
	Residential	1	51	0		5.3 (3/57)			8, 16, 19	" "	" "	" "
Lead In Suspended Particulate Matter	Commercial	3	.1-.1			0 (0/107)			19	" "	" "	" "
	Residential	1	.1			0 (0/57)			19	" "	" "	" "

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
SAULT ST. MARIE												
Sulphur Dioxide	Industrial/ Residential	1	.003	0		0 (0) (N/A)		0 (0) (N/A)	2, 7, 10	No significant change from 1981	No significant change from 1981	No significant change from 1982 if Algoma Steel remains at present production levels
Total Suspended Particulate Matter	Industrial/ Residential	3	51-133	2		31.1 (23) (74)			10, 2, 19	" "	Significant improvement over 1981	" "
Ozone	Industrial/ Residential	1	.014					.24 (8) (3400)	5, 20	" "	Data not available	" "
Lead In Suspended Particulate Matter	Industrial/ Residential	1	0.2			0 (0) (21)			19	" "	Significant deterioration over 1981	" "
Dustfall	Industrial Residential	10	2.3-15.3	N/A	9.0 (10) (111)					" "	" "	" "

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
SCARBOROUGH												
Sulphur Dioxide	Residential	2	0.003-0.007	0		0 (0) (702)		0 (0) (16551)	1, 8, 10, 20	No significant change from 1981	No significant change from 1981	No significant change from 1982
Nitrogen Dioxide	Residential	1	0.025			0 (0) (359)		0 (0) (8440)	5, 19, 20	" "	" "	" "
Carbon Monoxide	Residential	1	1.4				0 (0) (1056)	0 (0) (8450)	19	" "	" "	" "
Soiling Index	Residential	2	0.16-0.40	0		1.2 (8) (694)			7, 8, 19, 20	" "	" "	" "
Ozone	Residential	1	0.013					0.3 (23) (8441)	5, 20	" "	" "	" "
Lead In Suspended Particulate Matter	Residential	2	0.1-0.3		0 (0) (24)				7, 19	" "	" "	" "
Total Suspended Particulate Matter	Residential	2	43-59	0		2.8 (6) (217)			7, 8, 19	" "	" "	" "

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
SIMCOE												
Sulphur Dioxide	Rural	1	.004	0		0 (0/341)		0 (0/8144)	20	No significant change from 1981	No significant change from 1981	No significant change from 1982
Total Suspended Particulate Matter	Rural	1	32	0		0 (0/55)			3, 6, 20	" "	" "	" "
Soiling Index	Rural	1	.19	0		0 (0/334)			3, 6, 20	" "	" "	" "
Ozone	Rural	1	.028					1.6 (138/8437)	5, 20	" "	" "	" "
Nitrogen Dioxide	Rural	1	.014			0 (0/317)		0 (0/7535)	5, 20	Improvement from 1981	" "	" "
SMOOTH ROCK FALLS												
Total Reduced Sulphur	Industrial/ Residential	1	2.1					1.62(94/5786)	4	No significant change from 1981	" "	Possible deterioration when monitor is relocated.

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
STEPHEN TWP.												
Ozone	Rural	1	.024					1.4 (110/8115)	14		No significant change from 1981	No significant change from 1982
STOUFFVILLE												
Sulphur Dioxide	Rural	1	0.003	0		0 (0/320)		0 (0/7713)	20		" "	" "
Ozone	Rural	1	0.019					0.1 (7/8036)	5, 20		" "	" "
Total Suspended Particulate Matter	Rural	1	38	0		1.8 (1/55)					" "	" "
SUDBURY												
Sulphur Dioxide	Industrial/ Residential/ Urban	8	.008-.019	0		0 (0/N/A)		.42 (300/70956)	3, 7, 10	" "	" "	Possible deterioration when smelters resume operation

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
SUDBURY (cont'd)												
Sulphur Dioxide	Rural	9	.003-.011	0		0 (0) (N/A)		.14 (0) (N/A)	3	No significant change from 1981	No significant change from 1981	Deterioration when smelters resume operation
Nitrogen Dioxide	Industrial/ Residential/ Urban	1	.007			.5 (2) (365)		.28 (23) (8181)	3, 7, 10, 19	" "	Improvement over 1981	" "
Carbon Monoxide	Industrial/ Residential/ Urban	1						N/A (N/A) (7912)	3, 7, 10, 19	" "	No significant change from 1981	" "
Ozone	Industrial/ Residential/ Urban	1	.016					0 (0) (8323)	5, 20	" "	" "	" "
Total Suspended Particulate Matter	Industrial/ Residential/ Urban	4	37-50	0		1.0 (1) (98)			3, 7, 10	" "	" "	No significant change from 1982
Lead in Suspended Particulate Matter	Urban	1	.2-.4			0 (0) (42)			19	" "	" "	" "

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
SUDBURY (cont'd)												
Soiling Index	Urban	4	.12-.17	0		0 (0) (N/A)		.0 (0) (50143)	3, 4, 7	No significant change from 1981	No significant change from 1981	No significant change from 1982
Dustfall	Industrial/ Residential	7	2.4-4.6	N/A	10.8 (7) (65)				3, 7, 10	" "	" "	" "
TERRACE BAY												
Total Reduced Sulphur	Source Oriented	1	0.0					0 (0) (744)	4	New	Insufficient data available	" "
THOROLD												
Sulphur Dioxide	Source Oriented	2	.007-.040	1		5.0 (31) (622)		1.7 (255) (15130)	4, 10	No significant change from 1981	No significant change from 1981	" "
Dustfall	Source Oriented	2	6.0-12.2	1	57.1 (12) (21)				4	" "	Significant improvement over 1981	" "

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
THUNDER BAY												
Sulphur Dioxide	Commercial	1	.000	0		0 (0/332)		0 (0/7953)	1, 4	No significant change from 1981	No significant change from 1981	No significant change from 1982
	Residential	1	.001	0		0 (0/341)		0 (0/8619)	1, 4	" "	" "	" "
Dustfall	Commercial	2	3.7-3.9	0	12.5 (3/24)				7	" "	" "	" "
	Residential	3	2.9-4.1	0	11.4 (4/35)				7	" "	" "	
	Industrial	2	3.5-7.0	1	25.0 (6/24)				4, 7	" "	" "	" "
Total Reduced Sulphur	Industrial	1	2.8					0.9 (74/8106)	4	" "	" "	" "
Lead In Suspended Particulate Matter	Commercial	2	0.1-0.2			0 (0/108)			19	" "	" "	" "

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
THUNDER BAY (cont'd)												
Total Suspended Particulate Matter	Commercial	2	44-52	0		6.0 (7) (117)			7	No significant change from 1981	No significant change from 1981	No significant change from 1982
	Residential	2	37-39	0		6.1 (7) (114)			7	" "	" "	" "
	Industrial	1	61	1		17.2 (10) (58)			4	" "	" "	" "
Ozone	Commercial	1	.014	0		0 (0) (7591)			20	New	" "	" "
TIMMINS												
Dustfall	Rural/ Industrial	1	N/A	N/A	22.2 (2) (9)					No significant change from 1981	" "	" "
TORONTO												
Sulphur Dioxide	Commercial/ Residential	2	0.006-0.008	0		0 (0) (557)		0 (0) (13030)	1, 8, 10, 20	" "	" "	" "

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
TORONTO (cont'd)												
Sulphur dioxide	Industrial/ Residential	1	0.007	0		0 (0) (274)		0 (0) (6597)		No significant change from 1981	No significant change from 1981	No significant change from 1982
Nitrogen Dioxide	Commercial/ Residential	2	0.025-0.030			0 (0) (559)		0 (0) (13109)	5, 19, 20	" "	" "	" "
	Industrial/ Residential	1	0.025			0 (0) (184)		0 (0) (4425)		" "	" "	" "
Carbon Monoxide	Commercial/ Industrial	3	1.3-4.3				1.5 (40) (2634)	0.6 (17) (30457)	19	" "	" "	" "
	Industrial/ Residential	1	1.2				0 (0) (706)			" "	" "	" "
Soiling Index	Commercial/ Industrial	2	0.45 - 0.60	1		6.2 (35) (562)			7, 8, 19, 20	" "	" "	" "
	Industrial/ Residential	1	0.30	0		1.4 (4) (290)				" "	" "	" "
Ozone	Commercial/ Residential	2	0.012-0.015					0.4 (56) (12946)	5, 20	" "	" "	" "

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
TORONTO (cont'd)												
Ozone	Industrial/ Residential	1	0.013					0.8 (56 / 6824)		No significant change from 1981	No significant change from 1981	No significant change from 1982
Lead In Suspended Particulate Matter	Commercial/ Residential	2	0.3-0.6		0 (0 / 20)				7, 19	" "	" "	" "
	Industrial/ Residential	6	0.3-0.9		0 (0 / 69)				3, 19	" "	" "	" "
	Residential	3	0.4-0.7		0 (0 / 36)				3, 7, 19	" "	" "	" "
Total Suspended Particulate Matter	Commercial/ Residential	3	55-113	1		14.3 (88 / 617)			7, 8, 19	" "	" "	" "
	Industrial/ Residential	6	58-83	5		16.1 (291 / 1810)			3, 7, 8	" "	" "	" "
	Residential	3	60-68	2		10.8 (113 / 1043)			7, 8, 19	" "	" "	" "

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
WAWA												
Sulphur Dioxide	Residential	4	N/A	N/A		0 (0) (N/A)		.6 (121) (21993)	2, 10	Measurable improvement	No significant change from 1981	No significant change from 1982
Ozone	Residential	1	.026					N/A (N/A) (N/A)	5, 20	No significant change from 1981	" "	" "
WELLAND												
Dustfall	Source Oriented	4	4.8-14.9	4	43.8 (21) (48)				8	" "	Significant improvement over 1981	" "
Total Suspended Particulate Matter	Source Oriented	1	58	0		5.2 (3) (58)			8	" "	No significant change from 1981	" "
WINDSOR												
Sulphur Dioxide	Commercial	1	.012	0		0 (0) (358)		.01 (1) (8371)	1, 2, 8, 10	" "	" "	" "
	Industrial	1	.011	0		0 (0) (353)		0 (0) (8451)	1, 2, 8, 10	" "	" "	" "

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
WINDSOR (cont'd)												
Nitrogen Dioxide	Commercial	1	.030			0 (0) (363)		0 (0) (8499)	5, 16, 19, 20	No significant change from 1981	No significant change from 1981	No significant change from 1982
Carbon Monoxide	Commercial	1	1.1				0 (0) (1042)	0 (0) (8339)	8, 19	" "	" "	" "
Soiling Index	Commercial	1	.41	0		1.7 (6) (356)			2, 8, 16, 19	" "	" "	" "
	Residential	1	0.43	0		1.1 (4) (363)			2, 8, 16, 19	" "	" "	" "
Ozone	Commercial	1	.019					1.3 (108) (8096)	14, 20	" "	Significant improvement over 1981	" "
Total Suspended Particulate Matter	Commercial	2	57-70	1		6.8 (25) (368)			2, 8, 16, 19	" "	No significant change from 1981	" "
	Residential	8	40-74	4		4.3 (21) (492)			2, 8, 16, 19	" "	" "	" "
	Industrial	2	65-72	2		6.2 (7) (113)			2, 8, 26, 19	" "	" "	" "

AIR QUALITY BY GEOGRAPHICAL LOCATION

1981 RESULTS

LOCATION / Contaminant	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1982 Planned Results	1982 Preliminary Results	1983 Projected Results
WINDSOR (cont'd)												
Lead in Suspended Particulate Matter	Commercial	2	0.3-0.3			0 (0/373)			19	No significant change from 1981	No significant change from 1981	No significant change from 1982
	Residential	5	0.1-0.4			0 (0/234)			19	" "	" "	" "
	Industrial	2	0.2-0.3			0 (0/105)			19	" "	" "	" "

The chart below summarizes the number and percentage of Ontario communities affected by different types of air emissions. (Communities may be affected by more than one type of emission source - a total of 69 communities have been assessed.)

	1980-81	1981-82	1982-83 Planned	1982-83 Preliminary Actual	1983-84 Proposed
No. of communities with air quality affected by industrial emissions	N/A	65 (94.2%)	N/A	65 (94.2%)	65 (94.2%)
No. of communities with air quality affected by vehicle emissions	N/A	30 (43.5%)	N/A	30 (43.5%)	30 (43.5%)
No. of communities with air quality affected by space heating emissions	N/A	25 (36.2%)	N/A	25 (36.2%)	25 (36.2%)
No. of communities with air quality affected by urban and construction activity	N/A	6 (8.7%)	N/A	6 (8.7%)	6 (8.7%)
No. of communities with air quality affected by long range transport	N/A	29 (42.0%)	N/A	29 (42.0%)	29 (42.0%)

SUMMARY AND ASSESSMENT

Provincial air quality has improved significantly over the past twelve years and is now generally satisfactory. Sulphur dioxide emissions from Ontario sources will decrease over the next decade as a result of regulations placed on Inco Limited of Sudbury and Ontario Hydro. Future regulations or control orders on other Ontario sources can also be expected to improve air quality to some degree. Ministry efforts in the future will be directed towards maintaining existing air quality and focussing on outstanding localized problems, while increasing knowledge of the more hazardous emissions from industrial sources.

CORPORATE MBR PROJECT ON WASTE MANAGEMENT

OBJECTIVE

To reduce or prevent detrimental effects on land, flora, fauna and people resulting from wastes not discharged to air or water.

This corporate MBR project summarizes information from:

(i) the MBR Project on Waste Disposal, and

(ii) the MBR Project on Resource Recovery and Source Separation.

RESULTS

1982-83 Preliminary Actual data indicates that approximately 237 million litres of waybill-documented liquid industrial waste were treated, exported, destroyed or landfilled in Ontario. Of this quantity, 22.8% was directly landfilled, 22.7% was incinerated, 15.9% was received at transfer stations, 15.0% was exported out of the Province, 14.0% was reclaimed or reused, 4.6% was treated at sewage treatment plants, and 5.0% was dealt with in a miscellaneous fashion (i.e., wastes spread on farmland as a soil conditioner, wastes used on roads as a dust suppressant and other uses). The Ministry's main concern is over those wastes directly landfilled.

Of 761 municipal landfill sites operated during 1982-83, 142 sites have problems associated with groundwater, surface water, gas control, or site management. While it is expected that the total number of sites with problems will decrease to 114 during 1983-84, the percentage of problem sites with identified groundwater problems is expected to increase from 14.1% in 1982-83 to 20.2% in 1983-84. This increase is due to improved monitoring and assessments rather than deteriorating site conditions.

The Ontario Waste Management Corporation has isolated the Golden Horseshoe as the preferred geographic region for a liquid industrial waste treatment facility. In 1983-84 the Corporation will select and fully evaluate in detail the specific candidate site(s), decide on the preferred combination of components and size, and will develop conceptual designs of the facility components. The OWMC is expected to have a firm proposal (including site(s), preferred technology, and conceptual designs) ready to go to the Hearing Panel on Industrial Waste Management by December, 1983.

Programs to reduce the volumes of municipal waste going to landfill are continuing. Experimental Resource Recovery technology indicates that recovery rates of 4.2% are achievable. Source separation projects indicate a potential for recycling of 2.1% of municipal wastes.

SUMMARY AND ASSESSMENT

The Ministry is in the midst of a comprehensive review of all present waste management practices, policies and controls, including legislation, to provide improved protection to the environment and to the public. In mid-1983 a "Blueprint for Waste Management" is scheduled for completion. Following public review and consultation of the "Blueprint", necessary legislation, policies and programs establishing a comprehensive system of waste management will be introduced in 1984.

CORPORATE MBR PROJECT ON PESTICIDES CONTROL

OBJECTIVE

To promote the safe and proper use of pesticides.

This corporate MBR project summarizes information from the Program Level MBR Project on Pesticides Control.

RESULTS

Cases of pesticides misuse which result in illness or loss of agricultural crops or animals occur with very low frequency. On an annual basis, there are usually no significant cases of pesticides misuse, or only one or two significant cases.

Surface water monitoring in three southern Ontario watersheds indicate a few exceedences of water quality criteria for pesticides in use. Of recorded criteria exceedences most are noted among pesticides now banned or severely restricted.

CORPORATE MBR PROJECT ON ENVIRONMENTAL ASSESSMENT

OBJECTIVE

To provide for the consideration of natural and environmental factors in the decision-making processes of the proponents of major undertakings.

This corporate MBR project summarizes information from the Program Level MBR project on Environmental Assessment.

RESULTS

Benefits of the environmental assessment process include:

- the avoidance of future damages due to inadequate project planning, and
- greater public confidence that major Provincial and municipal undertakings are adequately protecting the environment.

During 1982-83, 20 environmental assessment projects are expected to be approved with conditions and 15 projects are expected to be granted exemptions from the assessment process. A total of 28 projects are expected to be under review at year-end and 56 projects are expected to be in a pre-submission consultation stage.

In 1983-84 19 new proposals are expected to be submitted by proponents.

CORPORATE MBR PROJECT ON SURFACE AND GROUND WATER QUANTITY

OBJECTIVE

To ensure the fair sharing and conservation of surface and ground water.

This corporate MBR summarizes information from the Level 2 MBR Project on Surface and Ground Water Management.

RESULTS

Summary indicators are under development.

APPENDICES

APPENDIX A

INVENTORY OF INDUSTRIAL FACILITIES CURRENTLY SUBJECT TO MBR APPRAISAL

A. PULP AND PAPER MILLS

1. Abitibi-Price - Thorold
   Beaver Wood Fibre Co. Ltd. - Thorold
   Domtar - St. Catharines
   Domtar - Thorold
   Kimberly Clark - St. Catharines
   Ontario Paper - Thorold

2. Atlantic Packaging - Scarborough
   Canadian International Paper - Toronto
   Domtar Fine Papers - Toronto
   Domtar Packaging - Toronto
   Continental Group - Toronto

3. Trent Valley - Glen Miller

4. Domtar - Trenton

5. Strathcona Paper - Napanee

6. Domtar - Cornwall

7. E. B. Eddy - Ottawa

8. Canadian International Paper Co. - Hawkesbury
   (closed down, December 1982)

9. Kimberly-Clark - Huntsville

9.1 Sunoco Limited - Brantford

10. Abitibi-Price - Iroquois Falls

11. Abitibi-Price - Sault Ste. Marie

12. Abitibi-Price - Smooth Rock Falls

13. Kimberly-Clark)
    Spruce Falls Power and Paper) - Kapuskasing

14. MacMillan Bloedel - Sturgeon Falls

15. Nordfibre - North Bay

16. E.B. Eddy - Espanola

17. Abitibi-Price - Thunder Bay
    Abitibi-Price- Fort William
    Abitibi-Price Provincial - Thunder Bay
    Great Lakes Paper - Thunder Bay

18. Domtar - Red Rock

19. Kimberly-Clark - Terrace Bay

20. American Can - Marathon

21. Boise-Cascade - Kenora

22. Great Lakes Paper - Dryden

23. Boise-Cascade - Fort Frances

B. IRON AND STEEL MILLS

24. Dofasco - Hamilton
Stelco - Hamilton
Slater Steel (Burlington Steel Div.) - Hamilton
Stanley Steel (cold rolled strip steel - Hamilton Div.)
Union Drawn Steel - Hamilton

26. Atlas Steel - Welland

27. Stelco - Nanticoke

28. Canada Alloy Castings - Kitchener

29. Lake Ontario Steel - Whitby

30. Eastern Steel Castings - L'Orignal

31. Algoma Steel - Sault Ste. Marie

32. Algoma Steel - Wawa

C. PETROLEUM REFINERIES

33. Texaco - Nanticoke

34. Imperial Oil - Sarnia
Shell Oil - Corunna
Suncor - Sarnia
Petrosar - Corunna

35. BP - Oakville
Gulf - Mississauga
Shell - Oakville

D. METAL MINES

36. Dickenson Mines - Balmertown
Campbell Red Lake Mines - Balmertown
Stelco - Griffith Mine - Ear Falls Twp.
Wilanour Resources - Cochenour

38. Union-Miniere Ltd. - Kapkichi

39. Mattabi Mines - Ignace

41. Inco - Lower Shebandowan Lake

42. Noranda Mines - Manitouwadge

43. Pamour Porcupine Mines - Schumacher Division - Timmins Area
Pamour Porcupine Mines (Noranda) - Timmins Area
Dome Mines - Timmins Area
Kidd Creek Mine - Timmins

44. Wilroy Mines - Kirkland Lake
Dofasco - Adams Mine - near Kirkland Lake

45. Kerr Addison Mines - Virginiatown

46. Agnico - Eagle Mines - Cobalt
Canadaka Mines - Cobalt
Silverfields- Mining Division - Teck Corporation - Cobalt

47. Sherman Mines - near Temagami

48. Inco - Coleman Mine (shutdown indefinitely)
- Garson Mine
- Copper Cliff Creek Plant
- Nolin Creek Plant
- CCN Refinery

Falconbridge - Strathcona Mines
- East Mine

Agnew Lake Mines - Twp. Hyman (not in operation)

49. Rio Algom - Elliot Lake (Quirk Mine)
Rio Algon - Elliot Lake (Panel Mine)
Denison Mines - Elliot Lake

E. NON-FERROUS SMELTERS

50. Kidd Creek - Timmins

51. Inco Nickel Refinery - Sudbury
Inco Iron Ore Reduction Plant - Sudbury
Falconbridge - Sudbury

52. Inco - Port Colborne

68. Chromasco - Haley Station

69. Eldorado Nuclear - Port Hope

70. Trimount Refineries and Smelting - Richmond Hill

40. Denison Mines - Elliot Lake

37. Eldorado - Blind River (operation to start in 1983)

F. CEMENT MANUFACTURERS

54. Canada Cement Lafarge - Woodstock

55. St. Mary's Cement - St. Mary's

56. St. Lawrence Cement - Mississauga

57. St.Mary's Cement - Bowmanville

58. Lake Ontario Cement - Picton

59. Canada Cement Lafarge - Bath

G. FOSSIL FUELLED THERMAL GENERATING STATIONS

60. J. C. Keith G.S. - Windsor

61. Nanticoke G.S. - Nanticoke

62. Lakeview G.S. - Mississauga
R. L. Hearn G.S. - Toronto

63. Lennox G.S. - Bath (to be mothballed in 1983)

64. Wesleyville G.S. (mothballed)

65. Atikokan G.S. - Atikokan (under construction)

66. Thunder Bay G.S. - Thunder Bay

67. Lambton G.S. - Sarnia

H. FISH PRODUCTS

71. McLean Bros. Fisheries - Wheatley
Omstead Food Ltd. - Wheatley

72. Erieau Packers Ltd. - Erieau

73. Wm. Sidall & Sons Fisheries - Lowbanks

I. PLASTICS AND SYNTHETIC RESINS

74. Oxy-Durez (Hooker) - Fort Erie

75. B.F. Goodrich - Niagara Falls

76. Polysar Ltd. - Cambridge

77. St. Lawrence Resin Products Ltd. - Cayuga

78a. DuPont of Canada Ltd. - Corunna

78b. Union Carbide Canada Ltd. - Moore Twp.

78c. Monsanto Canada Ltd. - Sarnia

79. A. Schulman Inc. - St. Thomas

80. Bakelite Thermosets Ltd. - Belleville

87. Celanese Canada Inc. - Millhaven

J. INDUSTRIAL CHEMICALS

88. Cyanamid Welland Plant - Niagara Falls

89a. Sulco Chemical Ltd. - Elmira

89b. Uniroyal Ltd. - Elmira

90a. Westinghouse Canada Ltd. - Hamilton

90b. Canadian Liquid Air Ltd. - Hamilton

90c. Columbian Chemicals Canada Ltd. - Hamilton

91a. Ethyl Corp. - Corunna

91b. C.I.L., Agricultural Chem. Division - Lambton

91c. Cabot Carbon of Canada Ltd. - Sarnia

91d. Dow Chemical of Canada Ltd. - Sarnia

91e. Esso Chemical Ltd. - Sarnia

91f. Polysar Ltd. - Sarnia

91g. Union Carbide (N-70 Gas Products Plant) - Sarnia

91h. Welland Chemical Ltd. - Sarnia

91i. Chinook Chemicals Corp. - Sombra

91j. Air Products Ltd. - Sarnia

91k. Dome Petroleum - Sarnia

92. Allied Corp. - Twp. of Anderdon

99a. C.I.L., General Chemicals Division - Copper Cliff.

99b. Inco Ltd., Sulphur Products Dept. (IORP) - Sudbury

99c. Inco Ltd., Sulphur Products Ltd. (Smelter) - Sudbury

100. Union Carbide Canada Ltd. - Sault. Ste. Marie

101a. Dupont - Maitland

101b. Nitrochem Inc. - Maitland

102. Dussex - Belleville

103a. BASF Canada Inc. - Cornwall

103b. Cornwall Chemicals Ltd. - Cornwall

103c. Pfizer Co. Ltd. - Cornwall

103d. C.I.L. - Cornwall

103e. Celanese Canada Ltd. - Cornwall

103f. Courtalds - Cornwall

104 Alcan - Ottawa

105 Reichold Chemicals - Thunder Bay

K. ABRASIVES

106a. Wright Abrasives Ltd. - Hamilton

106b. Canadian Grinding Wheel Co. Ltd. - Hamilton

107a. Dresser Industries Canada Ltd. - Brantford

107b. Norton Company - Brantford

108a. Canadian Carborundum - Niagara Falls

108b. Norton Co. - Niagara Falls

108c. Gen. Abrasives - Carpenter Works - Niagara Falls

109. Exolon Co. of Canada Ltd. - Thorold

110. Canada Sand Papers Ltd. - Plattsville

111. Midwest Abrasives Co. of Canada Ltd. - Strathroy

112. Unicorn Abrasives of Canada Ltd. - Brockville

L. METAL STAMPING, PRESSING AND COATING

114. I.M.F. Canada Ltd. - Guelph

115a. Accurate Machine & Tool Ltd. - Weston

115b. Hercules Food Equipment Ltd. - Weston

115c. Newark Tool & Machine (1977) Ltd. - Weston

115d. Opus Ferrum Ltd. - Weston

115e. Reynolds Aluminum Co. of Canada Ltd. - Weston

116a. ACME Steel Co. of Canada Ltd. - Scarborough

116b. Alcan Canada Products Ltd. - Scarborough

116c. Ekco Canada Ltd. - Scarborough

116d. Magna International Inc. - Scarborough

116e. Roll Formed Specialty & Equipment Ltd. - Scarborough

116f. Sigma Tool & Machine Ltd. - Scarborough

116g. Spun Metals Ltd. - Scarborough

116h. Supreme Aluminum Industries Ltd. - Scarborough

117a. Agway Metals Inc. - Mississauga

117b. Esselte Pendaflex Canada Inc. -Mississauga

117c. Gaylord Regethermic Canada Ltd. - Mississauga

117d. Indal Limited - Mississauga

117e. ITT Industries of Canada Ltd. - Mississauga

L. METAL STAMPING, PRESSING AND COATING (cont'd)

117f. Kaiser Aluminum & Chemical Canada Investment Ltd. - Mississauga

117g. Petrona Tool & Eie Ltd. - Mississauga

117h. Premier Metal Industries Ltd. - Mississauga

117i Samuel Strapping Systems Ltd. - Mississauga

118a. American Can Canada Inc. - Hamilton

118b. G.S.W. Inc. - Hamilton

118c. Robertson Building Systems Ltd. - Hamilton

118d. Stanley Precision Inc. - Hamilton

118e. Universal Handling Equipment Co. Ltd. - Hamilton

119. American Can Canada Inc. - Malton

120. American Can Canada Inc. - Simcoe

121a. Anchor Cap & Closure Corporation of Canada Ltd. - Toronto

121b. Bernardin of Canada Ltd. - Toronto

121c. Chartwell Industries Ltd. - Toronto

121d. Crown Cork & Seal Co. Ltd. - Toronto

121e. F.& K. Mfg. Co. Ltd. - Toronto

121f. L.P. Anderson Mfg. Ltd. - Toronto

121g. Signode Canada Ltd. - Toronto

122a. Apex Metals - Kitchener

122b. Electrohome Ltd. - Kitchener

122c. Jacmorb Manufacturing Ltd. - Kitchener

122d. Pano Cap (Canada) Ltd. - Kitchener

123a. H & L Metal Poducts (Elmira) Ltd. - Elmira

123b. Snyder Metal Fabricating Ltd. - Elmira

124. Beach Industries Ltd. - Smiths Falls

125a. Bevel Stamping Co. Ltd. - Downsview

125b. Central States Can of Canada Ltd. - Downsview

125c. Experimental Tool Mfg. Co. Ltd. - Downsview

125d. Magna International Inc. - Downsview

125e. National Machine Products Ltd. - Downsview

125f. Reversomatic Heating & Mfg. Ltd. - Downsview

125g. 379012 Ontario Ltd. (Sunview Doors Div.) - Downsview

125h. 379012 Ontario Ltd. (Crown Signs Div.) - Downsview

125i. Waltec Inc. (Arista Newman Div.) - Downsview

126a. Brunt's Ltd. - Rexdale

126b. Chromalox Canada Ltd. - Rexdale

126c. The Expanded Metal Co. of Canada Ltd. - Rexdale

126d. Vollrath of Canada Ltd. - Rexdale

126e. Vulcan Industrial Packaging Ltd. - Rexdale

L. METAL STAMPING, PRESSING AND COATING (cont'd)

126f. Westeel-Rosco Ltd. - Rexdale

127a. Canada Stampings & Dies Ltd. - Woodstock

127b. Newport Custom Steel Fabricating Corp. - Woodstock

128. Carnation Inc. - Aylmer

129a. Central Stampings Ltd. - Windsor

129b. Fabricated Steel Products (Windsor) Ltd. - Windsor

129c. 365537 Ontario Ltd. - Windsor

130a. Corrugated Pipe Co. Ltd. - Stratford

130b. Jones Manufacturing Co. Ltd. - Stratford

131. Leigh Metal Products Ltd. - London

132. Nestle Enterprises Ltd. - Wallaceburg

133. Plant National (Petrolia) Ltd. - Petrolia

134. H.J. Heinz Co. of Canada Ltd. - Chatham

135. Brydge - Market Corporation - Paris

136a. Butler Metal Products Co. Ltd. - Cambridge

136b. Preston Metal & Roofing Prod. Ltd. - Cambridge

137. Canadian Canners Ltd. - Smicoe

138a. Canadian Canners Ltd. - Burlington

138b. Hunter Drums Ltd. - Burlington

139a. Cochrane Tool & Design Ltd. - Markham

139b. Don Park Sheet Metal Supplies Ltd. - Markham

139c. Electronic Metal Farm Industries Ltd. - Markham

140. Dart Industries Canada Ltd. - Barrie

141. Fleetwood Metal Industries Ltd. - Concord

142. G.T.E. Sylvania Canada Ltd. - Ajax

143a. Pedlar Industrial Inc. - Brampton

143b. Rieke Canada Ltd. - Brampton

144a. Plymouth Tool & Stamping Ltd. - Agincourt

144b. SuburbanMetals Industries Ltd. - Agincourt

145. Oliver Macleod Ltd. - Gravenhurst

146. Pedlar Industrial Inc. - Oshawa

147. Regal Ware Inc. - Orangeville

148. Rheem Canada Ltd. - Oakville

149. Taman Industries Ltd. - Bramalea

150. The Continental Group of Canada Ltd. - Etobicoke

151. The Continental Group of Canada Ltd. - Vaughan

152. Toronto Kitchen Equipment Co. Ltd. - Willowdale

152a. Twin-Cee Limited - Georgetown

L. METAL STAMPING, PRESSING AND COATING (cont'd)

152b. Westeel-Rosco Limited - Georgetown

153. Homeware Industries Ltd. - Tottenham

154. Modular Architectural Components Ltd. - Coburg

155. Grief Containers Inc. - Stoney Creek

156. Koppers International Canada Ltd. - Waterloo

157a. Lockwood Manufacturing Inc. - Brantford

157b. Magnetic Metals Ltd. - Brantford

158a. Seneca - St. Catharines

158b. Tri-Sure Products Ltd. - St. Catharines

159. Toromont Industries Ltd. - Dundas

160. Wallace Murray Canada Inc. - Brockville

161. R.J. Stamping Co. Ltd. - Smith Falls

162a. Ideal Roofing Co. Ltd. - Ottawa

162b. Koppers International Canada Ltd. - Ottawa

162c. Rideau Aluminium & Steel Ltd. - Ottawa

162d. Royal Canadian Mint - Ottawa

163. Stelco - Gananoque

164. Northway Metal Fabricators Ltd. - Sudbury

APPENDIX B

INVENTORY OF LIQUID INDUSTRIAL WASTE SITES, FACILITIES, TREATMENT CENTRES OR PLANTS

1981-82	1982-83 Preliminary Actual	1983-84 Proposed
A. INCINERATORS		
Syntath, St. Catharines	Syntath, St. Catharines	Syntath, St. Catharines
Tricil, Corunna	Tricil, Corunna	Tricil, Corunna
B. DIRECT LANDFILL		
Arnprior, Township of NcNab	Arnprior, Township of NcNab	City of Barrie
City of Barrie	City of Barrie	City of Brantford
City of Brantford	City of Brantford	City of Guelph
City of Guelph	City of Guelph	City of Paris
City of Paris	City of Paris	City of Welland
City of Welland	City of Welland	Tricil, Corunna
Ridge Landfill, Township of Harwich	Township of Hamilton	Abitibi Provincial, Halton Hills
Township of Hamilton	Tricil, Corunna	Dow Chemical, Sarnia
Township of Mariposa	Abitibi Provincial, Halton Hills	Imperial Oil, Sarnia
Tricil, Corunna	Dow Chemical, Sarnia	
Abitibi Provincial, Halton Hills	Imperial Oil, Sarnia	
Dow Chemical, Sarnia		
Imperial Oil, Sarnia		

C. SEWAGE TREATMENT PLANTS

1981-82	1982-83 Preliminary Actual	1983-84 Proposed
Ashbridges Bay, Toronto	Baker Road, Grimsby	Ashbridges Bay, Toronto
B. P. Refinery, Oakville	Barry's Bay	B. P. Refinery, Oakville
Baker Road, Grimsby	Belleville	Baker Road, Grimsby
Barry's Bay	Chrysler Canada, Windsor	Barry's Bay
Belleville	Clarkson, Mississauga	Belleville
Chrysler Canada, Windsor	Cobourg	Chrysler Canada, Windsor
Clarkson, Mississauga	Duffin Creek, Pickering	Clarkson, Mississauga
Duffin Creek, Pickering	Gananoque	Cobourg
Dupont of Canada, Maitland	Hamilton	Duffin Creek, Pickering
Falconbridge Nickel, Falconbridge	Harmony Creek, Whitby	Gananoque
Gananoque	Holland Landing, Newmarket	Hamilton
Hamilton	Kitchener	Harmony Creek, Whitby
Harmony Creek, Whitby	Niagara Falls	Holland Landing, Newmarket
Holland Landing, Newmarket	Peterborough	Kitchener
Humber Plant, Etobicoke	Petrolia	Niagara Falls
Kitchener	Port Dalhousie, St. Catharines	Peterborough
Midland		Petrolia
Niagara Falls		Port Dalhousie, St. Catharines
North Don, Toronto		
Peterborough		
Port Dalhousie, St. Catharines		

1981-82	1982-83 Preliminary Actual	1983-84 Proposed
D. RECLAIMERS/REUSERS		
Agnew Lake Mines, Espanola	CanAm Oil, Windsor	CanAm Oil, Windsor
Aimco Solrec, Toronto	CanAm Oil, Toronto	CanAm Oil, Toronto
Anachemica Solvents, Mississauga	Canflow Services, Sarnia	Canflow Services, Sarnia
B.P. Refinery, Oakville	Entropex Corporation, Sarnia	Entropex Corporation, Sarnia
Breslube, Breslau	Retek Resource Recovery, Brantford	Industrial Chemical, Toronto
CanAm Oil, Breslau	Scandex, Kitchener	Retek Resource Recovery, Brantford
CanAm Oil, Toronto	Thomscan Ind. Services, Mississauga	Scandex, Kitchener
Canflow Services, Sarnia	Varnicolour, Elmira	Thomscan Ind. Services, Mississauga
Cedarhurst Quarries, Mount Albert	Woodington Systems, Thorold	Varnicolour, Elmira
Entropex Corporation, Sarnia		Woodington Systems, Thorold
Gormley Sand and Gravel		
Industrial Chemical, Toronto		
Motor City Petroleum, Windsor		
Retek Resource Recovery, Brantford		
Rio Algom, Elliot Lake		
Scandex, Kitchener		
Stelco, Hamilton		
Thomscan Ind. Services, Mississauga		
Varnicolour, Elmira		
Woodington Systems, Thorold		

E. EXPORT

1981-82	1982-83 Preliminary Actual	1983-84* Proposed
C & M Chemical Inc., Pittsburg, Pennsylvania	Alchemtron, Inc., Cleveland, Ohio	
Carter's Waste Oil, Detroit, Michigan	Carter's Waste Oil, Detroit, Michigan	
CECOS, Niagara Falls, New York	CECOS, Niagara Falls, New York	
Chem-Met Services, Wyandotte, Michigan	Chem-Met Services, Wyandotte, Michigan	
Chemical Waste Mangement, Vickery, Ohio	Chemical Waste Mangement, Vickery, Ohio	
Edwards Oil, Detroit, Michigan	Eastman Kodak, Rochester, New York	
Environmental Waste Control, Inkster, Michigan	Edwards Oil, Detroit, Michigan	
Frontenac, Niagara Falls, New York	Environmental Waste Control, Inkster, Michigan	
Frontier Chemical, Niagara Falls, New York	Frontenac, Niagara Falls, New York	
General Oil, Detroit, Michigan	Frontier Chemical, Niagara Falls, New York	
Industrial Env. Serv., Mt. Marion, New York	General Oil, Detroit, Michigan	
Kinetic Contaminants, Nisku, Alberta	Industrial Env. Serv., Mt. Marion, New York	
Liquid Disposal, Utica, Michigan	Kinetic Contaminants, Nisku, Alberta	
Nelson Industrial, Detroit, Michigan	Nelson Industrial, Detroit, Michigan	
Norlite, Cohoes, New York	Norlite, Cohoes, New York	
SCA, Model City, New York	Normandie Oil Ltd., Montreal, Quebec	
Service Central De Reservoirs, Montreal, Quebec	Potsdam Paper Corp., Potsdam, New York	
Tonawanda Tank Transport, Buffalo, New York	SCA, Model City, New York	
Tricil, Mercier, Quebec	Service Central De Reservoirs, Montreal, Quebec	
Wiseman Oil, Coraopolis, Pennsylvania	Ski, Detroit, Michigan	
	Tricil, Mercier, Quebec	

* All companies shown have received wastes during 1982-83, and the same companies are expected to receive wastes during 1983-84.

1981-82	1982-83 Preliminary Actual	1983-84 Proposed
F. TRANSFER STATIONS		
Campbell's Garage, Guelph	Campbell's Garage, Guelph	Campbell's Garage, Guelph
Cantro Oil Recyclers (Honey Bee), Windsor	Cantro Oil Recyclers (Honey Bee), Windsor	Cantro Oil Recyclers (Honey Bee), Windsor
Chem & Petro Waste, Township of Vespra	Chem & Petro Waste, Township of Vespra	Chem & Petro Waste, Township of Vespra
Chemical Waste Management, Smithville	Chem-King Inc., Barrie	Chem-King Inc., Barrie
Comco Service Station, Barrie	Chemical Waste Management, Smithville	Chemical Waste Management, Smithville
E & T Enterprises, Millbank	H. Campbell & Sons Ltd., Lyn	H. Campbell & Sons Ltd., Lyn
Frontenac Chemical Waste, Hamilton	Jims Trucking, Welland	Jims Trucking, Welland
Jims Trucking, Welland	Mac's Liquid Disposal, London	Mac's Liquid Disposal, London
Mac's Liquid Disposal, London	Mosaic Chemical, Mississauga	Mosaic Chemical, Mississauga
Mosaic Chemical, Mississauga	O. E. MacDougall, Brockville	O. E. MacDougall, Brockville
O. E. MacDougall, Brockville	Nacan Products Ltd., Toronto	Palro, Burford
Palro, Burford	Palro, Burford	Petrolia & Enniskillin, Petrolia
Petrolia & Enniskillin, Petrolia	Pittsburg Paints, Toronto	Pittsburg Paints, Toronto
Pittsburg Paints, Toronto	Poirier Waste Pumping, Navan	Poirier Waste Pumping, Navan
Poirier Waste Pumping, Navan	Syntath, St. Catharines	Syntath, St. Catharines
Syntath, St. Catharines	Tricil Ltd., Mississauga	Tricil Ltd., Mississauga
Tricil Ltd., Mississauga	Tricil Ltd., Windsor	Tricil Ltd., Windsor
Tricil Ltd., Windsor		

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